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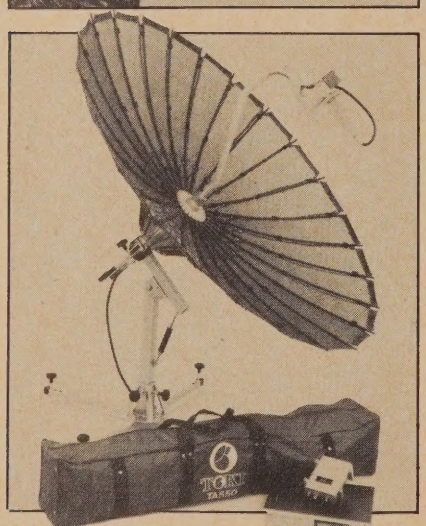
Volume 1, Number 6
February 1986



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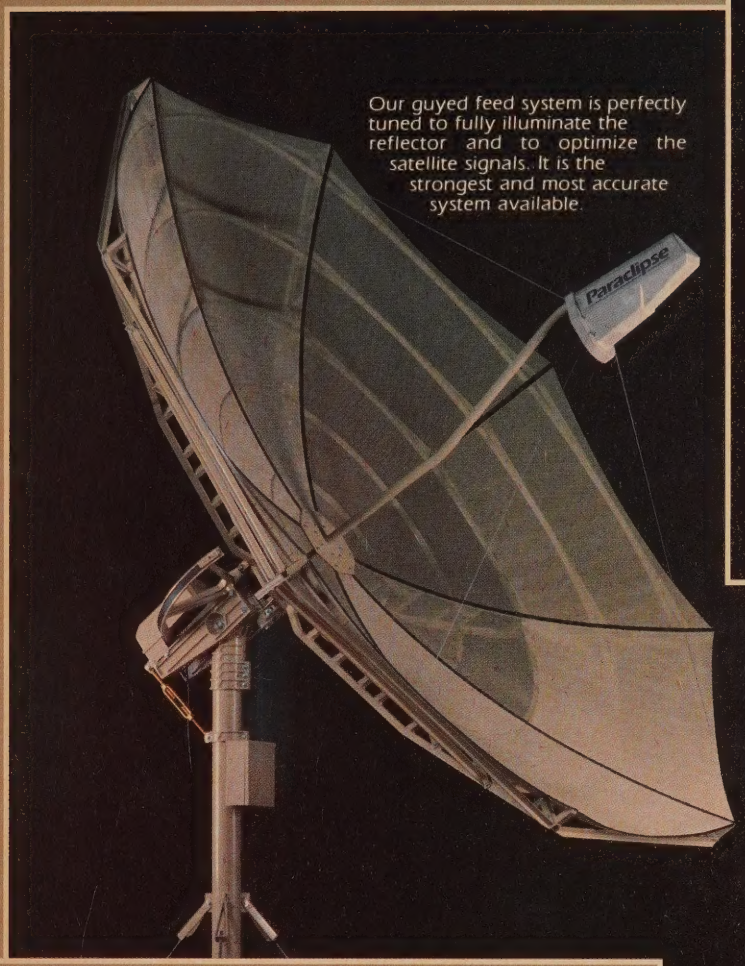
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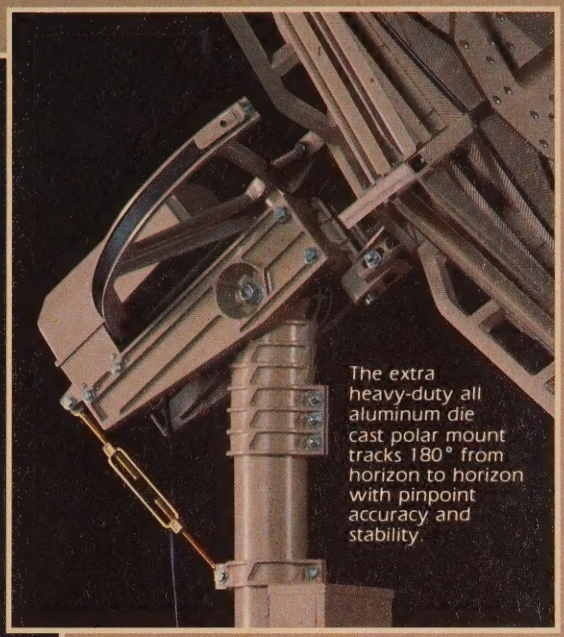
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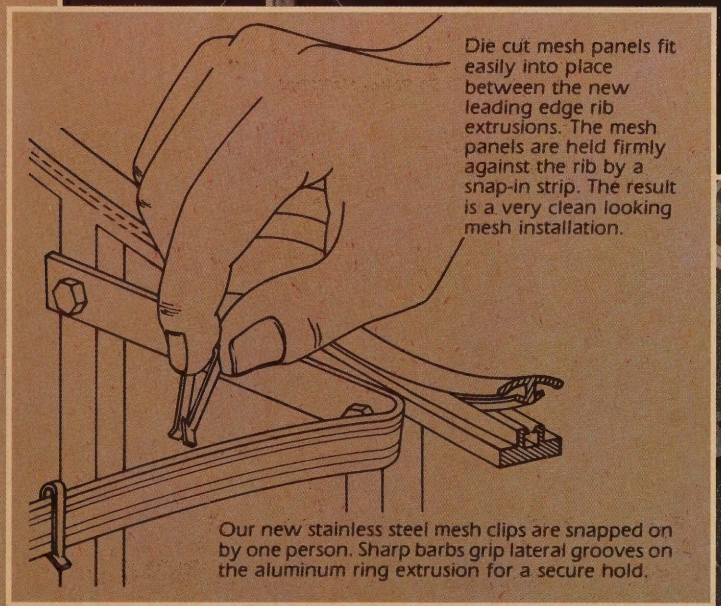
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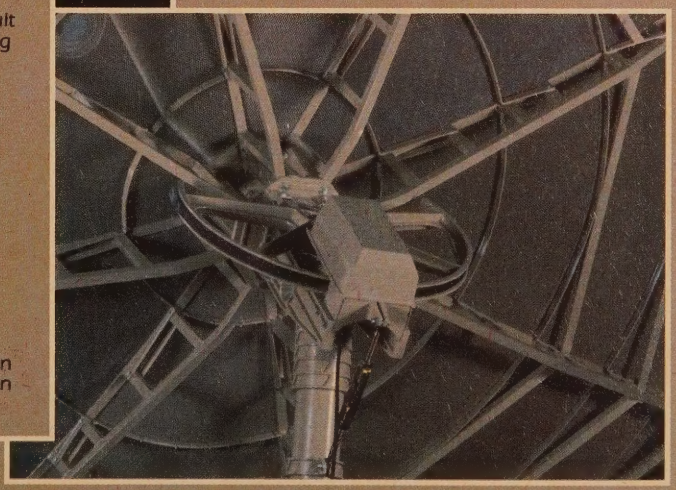

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PUBLISHER
STANLEY R. HARRIS

PUBLISHING DIRECTOR
PHYLLIS GOLDSTEIN

EDITOR
DAVID J. ELRICH

ART DIRECTOR
SEAN KEVIN GAFFNEY

COPY EDITORS
JOSEPH LALAINA
PAUL WHEELER

COVER DESIGN
BARBARA COSTELLO

PRODUCTION DIRECTOR
ROY MOSNY

CIRCULATION DIRECTOR
HARRIS HONICKMAN

MARKETING DIRECTOR
RICHARD FOGEL

CONTRIBUTING EDITORS
PETER HENSON
THOMAS J. STOCKER

TECHNICAL EDITOR
ANTHONY T. EASTON

ENTERTAINMENT EDITOR
SUSAN EASTON

ADVERTISING MANAGER
MATTHEW H. STANDER
Harris Publications, Inc.
1115 Broadway
New York, N.Y. 10010
(212) 807-7100

West Coast Advertising Representatives
A.T.E. & Associates
PETER BEARDSLEY
KAREN STOLTE
145 Woodside Drive
San Anselmo, Ca. 94960
(415) 485-0551

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LETTERS TO THE EDITOR

SCRAMBLED UP

HBO and the cable people don't want the people who live in the country where cable will not go. We all can't live in the City! So we buy a dish... If you don't help us you'll give them a license to do as they please.
Ed Mesquin
Wagener, S.C.

Editor's note: Remember, Ed, we are fighting alongside you for your right to watch satellite television. However, everyone who owns a dish must let their representatives know they are very upset about scrambling so a reasonable fee arrangement can be made between all parties. The programmers have a right to protect their signals but they don't have the right to gouge viewers whose only TV comes via a satellite dish.

A CLARIFICATION

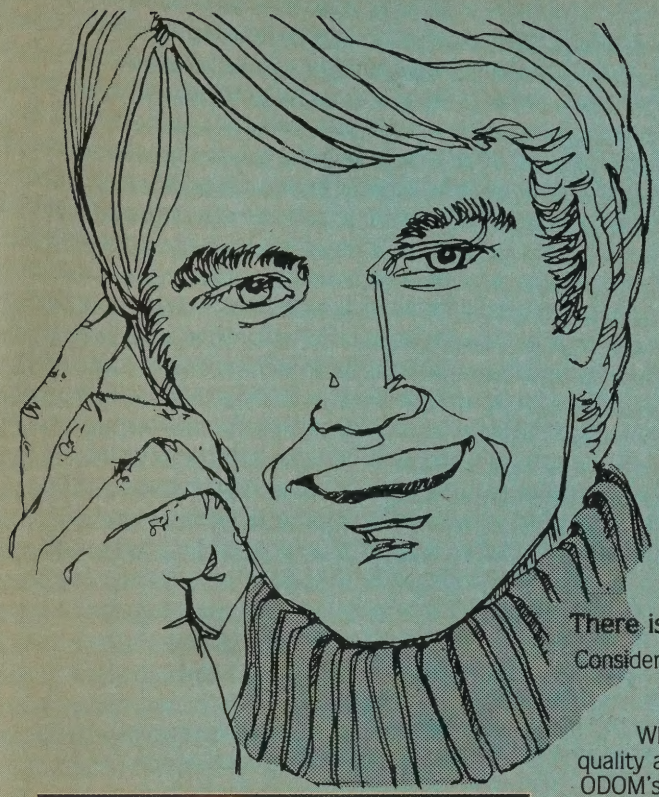
I would like to take this opportunity to add some information to, and perhaps correct a misconception, perpetuated by Craig Williams in his feature "Electronic Gospel," in the November issue.

First of all, the Mormons (members of the Church of Jesus Christ of Latter Day Saints) are indeed represented among the satellites. The LDS Church holds semi-annual World Conferences each year, the first weekends of April and October. Each Conference consists of about 10 hours of broadcast on the Friday evening, Saturday, and Sunday, and can be found on Westar 4, transponder 24 (often listed as 12B). In addition to business of the Church and spiritual instruction, the famed Tabernacle Choir performs several times during each session.

Bonneville Broadcasting broadcasts many Brigham Young University athletic events, which may be found on the same transponder.

Lastly, Mr. Williams insinuated that Mormons are not Christians. This is a common bit of misinformation, and I am sure that he did not intend to denigrate our beliefs, however I most protest that, if belief in Jesus Christ as a personal savior and as the leader of His earthly church are the prerequisites for Christianity, then we certainly qualify.

I realize, of course, that your's is a technical magazine and not a religious forum, but I felt that I could not let this error, however harmlessly intended, pass without comment.
Michael S. Greene
Keyport, Wash. •



HOW MUCH DIFFERENCE CAN IT MAKE? A DISH IS A DISH..... OR IS IT?

There is a big difference . . .

Consider how important a dish really is. Day in, day-out for years it is going to sit out there in the elements bringing in hundreds of channels of satellite TV for your entertainment. When you're ready to buy, protect your investment. Rely on the quality and dependability of an ODOM antenna. Ask your dealer about ODOM's reputation for quality . . . such a reputation has to be earned. Backed by one of the oldest and most respected antenna manufacturers, an ODOM antenna is an investment in engineering innovation and proven performance.

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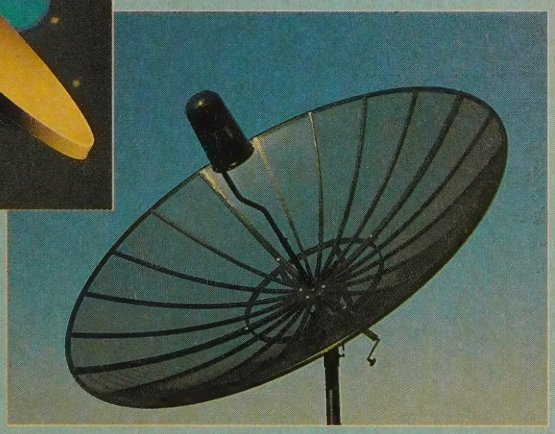

the ODOM Classic

State-of-the-art engineering in metal antennas . . . the ODOM Classic is designed for the next generation of satellites and is Ku-band compatible, now. If you're looking for quality at an affordable price, ask for an ODOM by name — it's a classic!

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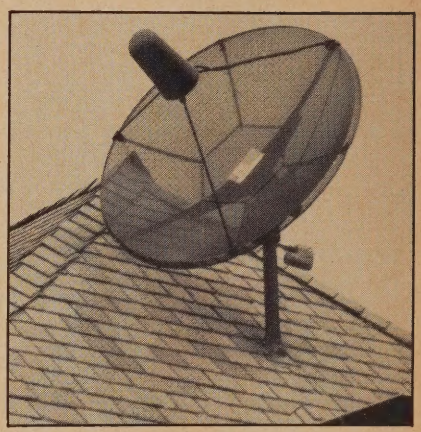
Satellite Scoops

Latest news about the world of satellite TV.

By the Editors

ZONING BATTLES CONTINUE: A Broward County, Florida, circuit court judge has issued a temporary injunction restraining Plantation, Florida's latest attempt to enforce regulations restricting the placement and use of satellite dishes. The new ordinance, adopted a few months ago, put a hornet's nest of regulations upon prospective dish owners. The injunction challenges the constitutionality of the ordinance, pending a full hearing on Dec. 20, 1985. Brush fires like this flare all across the country and the dish industry's trade association, SPACE, runs everywhere trying to put them out. If you have a problem with zoning, contact SPACE at 300 N. Washington St., Suite 310, Alexandria, Va. 22314. As a follow-up to the FCC's ruling on the subject, all we are hearing from Washington is "any day now..."



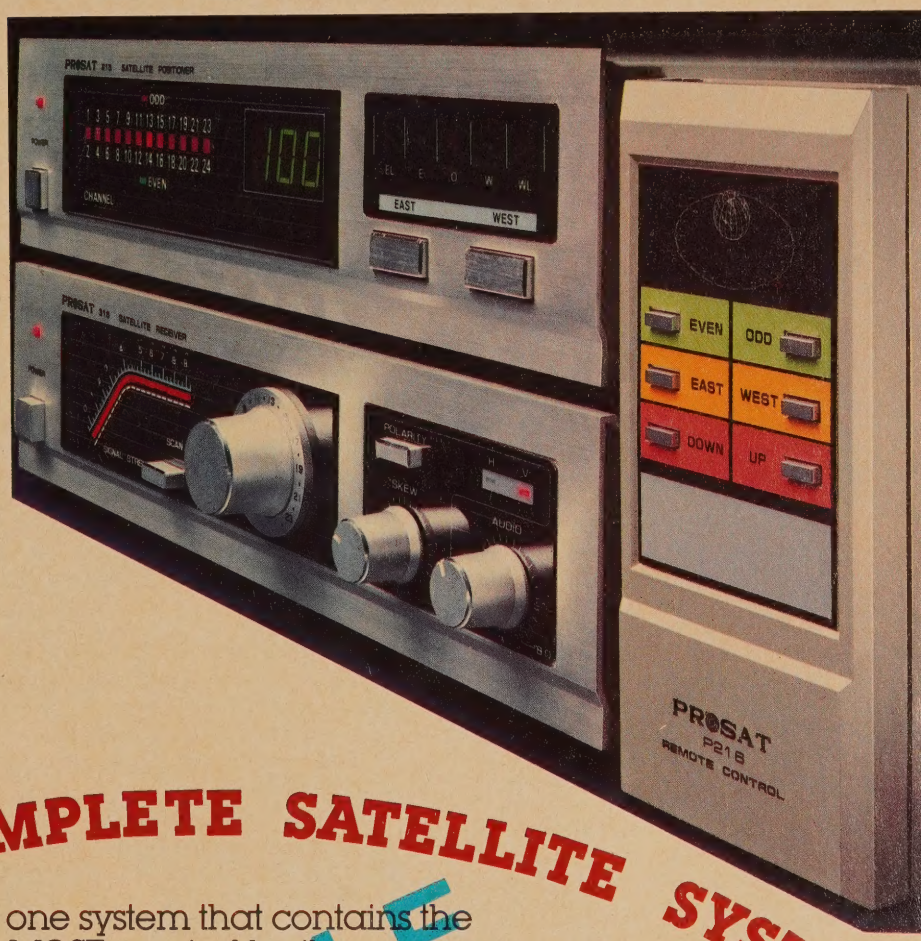
THE HOTTEST STORIES: Showtime/The Movie Channel will begin partial encryption of their signals in January and will be scrambled fulltime by May. They'll be using M/A Com equipment...ESPN has plans to scramble as well except they don't have enough money to buy the equipment!...In the battle to see which scrambling system will be used, it appears M/A Com is in the lead since WTBS is also considering the Videociper II...Superstation WOR also announced plans to scramble full time March 1st. Testing of the system was to begin on January 15 using, naturally enough, M/A Com equipment. Although many people are angry with M/A Com for developing the scrambling technology and some have called for illegal boycotts of the firm, Wall Street did a number on their stock in November. It appears the brokers aren't convinced about scrambling as a way to make money either...

ONE FOR OUR SIDE: South Dakota's Governor, William Janklow, recently had a satellite system installed at the Governor's Mansion. Janklow has been an avid supporter of satellite TV since he first installed a commercial system in 1981. Janklow is expected to be South Dakota's next U.S. Senator. He will surely be a staunch supporter of dish owner rights in Washington, D.C. What does he think of scrambling? There are over a hundred available channels right now and others are entering the scene for the sole purpose of serving the home satellite market...if a few programs are scrambled, he will not even miss them!

FARM AID BEGINS: In the middle of November, the first proceeds of the "FarmAid" spectacular were given to farm groups in 22 states. Close to $900,000 was spread around, roughly 10 percent of the money pledged during the concert held in Champaign, Ill., and televised across the country—thanks to satellite feeds. The original extravaganza was carried on The Nashville Network (Galaxy 1, Transponder 22).

SO WHAT'S NEW?: The ABC Television Network Los Angeles billboard featured this little message recently which tells of things to come in the way of an added attraction for the network. While it's not surprising — NBC already broadcasts a limited number of programs in "stereo" —it should be old hat for many home satellite system owners who are already enjoying stereo audio as a standard feature. Eventually satellite receivers will be outfitted with stereo reception capability as standard equipment, and many new receivers already are so you won't have to wait when the networks finally crawl out of the dark ages and give the 'masses' a taste of what we've already been enjoying for a few years. The only problem for those who do not own a satellite system will be upgrading their TVs or having to go out and buy expensive TVs with stereo capability. By the way we'd like to extend best regard's to "Don & Raoul," whoever and wherever you are.

PROSAT PETAL



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Your Questions Answered

By The Dish Doctor

Tracking Trackers

Q *I want to buy a system but I am confused about trackers. Which is the best kind and what is the difference between a horizon tracker and a linear one?*
E. S., Topeka, Kans.

A A tracker, or in the industry jargon an "actuator," moves the dish and positions it in line with the dozen or so satellites transmitting television programming. When there was only one or two satellites to contend with a hand-crank-type actuator was acceptable, but as more satellites were added and more programming became available the "linear actuator" (originally used for a multitude of applications including positioning hospital beds) was retrofitted, then became somewhat of the standard of the home satellite industry for moving dishes. The linear actuator has always had some drawbacks, and while it has performed well (for the most part) it is being replaced with the "horizon-to-horizon" motorized mount which should become the industry standard in a few short years. The motorized horizon-to-horizon, or H2H mount as we like to call it, has many advantages over the linear type actuator, not the least of which is its ability to move the dish so that the dish can see from 140° to 180° of the satellite belt. Most linear actuators are restricted, by their stroke length, to about 60°. If you are planning to buy a system take a good look at H2H motorized mounts, they are a definite plus for getting the most out of your system today and in the future.

Traveling Receiver

Q *My receiver is about three years old and was moved about 300 miles from my mother-in-law's house. My problem is that it will work just fine for a few minutes then it goes crazy. It was a gift from my mother-in-law and I really can't afford a dealer to check it out. What can I do to fix it?*
D. W., Polkville, N.C.

A It sounds like a heat build-up problem. If the receiver does not receive sufficient air flow around it that could be causing your problem. Remember always give any electronic device adequate breathing room. The other cause could be that the receiver was jarred in the move and an internal component could be very close or touching the cabinet, causing a heat build up. Turn the receiver on and when it "goes crazy" take your hand and feel for hot spots on the case. If you feel a particularly hot spot turn off the receiver and unplug it. Remove the case and see if there is a component very near or touching the case where you felt the hot spot. Very gently bend the component back towards the center of the circuit board—be very careful when doing this, it shouldn't take very much to realign it and get it away from the case. This should solve your problem.

Crossed Signals

Q *I see advertisements in magazines for "descramblers" and I wonder if these will work for HBO and some of the other channels that say they are going to scramble.*
D.L., Bixby, Okla.

A Home Box Office (HBO/Cinemax) is offering its own descrambler that you can purchase for about $395 which they claim will descramble up to 50 services. The only problem we have with that is we wonder how they can charge that much for what is basically an installation charge much like cable systems charge for hookups to premium services. The most you would pay in a cable system for such a hookup is a few dollars, and hopefully the big guns in Washington will be able to remedy this very unbalanced situation. The ads you are seeing are probably for surplus cable system descramblers and they will not work with the system that HBO and others are planning to use. There is currently no off-the-shelf descrambling system that will work with the proposed system for satellite signals so you would just be throwing your money away if you bought one of these units. Also keep in mind that according to the Congressional Act that made home satellite TV legal it is against the law to descramble scrambled signals and watch them unless you are paying the program supplier for their service. Contrary to Cable News Network's current advertising campaign it is not (and we repeat) not illegal to view unscrambled signals. •

See Panasonic® Satellite Equipment at these Distributors:

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Cable TV Supply Co., Inc.
Los Angeles, California
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Centennial
Yonkers, New York
914-476-2100

Consumer Satellite Systems Inc.
Noblesville, Indiana
317-845-4400

Echosphere Corporation
Englewood, Colorado
303-761-4782

High Frontier Distribution
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International Video
Communications Corporation
North Little Rock, Arkansas
800-643-5427 – Outside Arkansas
501-771-2800

Intercontinental
Products Corporation
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800-525-5959

Kelgo International, Ltd.
Norcross, Georgia
404-447-9450

National Satellite Communications
Clifton Park, New York
518-383-2211

Recreational Sports & Imports, Inc.
Idaho Falls, Idaho
208-523-5721

Satellite Earth Stations East, Inc.
Mamou, Louisiana
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So get down to business with our formidable industrial Ku/C-6000 receiver. As attractive as it is rugged, this rack-mountable unit is ideal for teleconferencing, SMATV systems and dozens of industrial uses.

Morever, it offers the same versatility and shares many of the features of our C-2000 satellite receiver.

The C-2000 brings a whole new world of entertainment into the home. Full-featured and versatile, it offers a 950-1450 MHz input frequency Block Down Convertor system to accommodate multiple receivers. Plus it's Ku-Band compatible. Yet it's one of the easiest-to-use systems you'll ever find, starting with it's 10-function detachable remote control.

No matter which you select, you'll get receivers and components backed by Panasonic reliability, quality and technical support. Because, boardroom or living room, we don't leave room for error.

Panasonic
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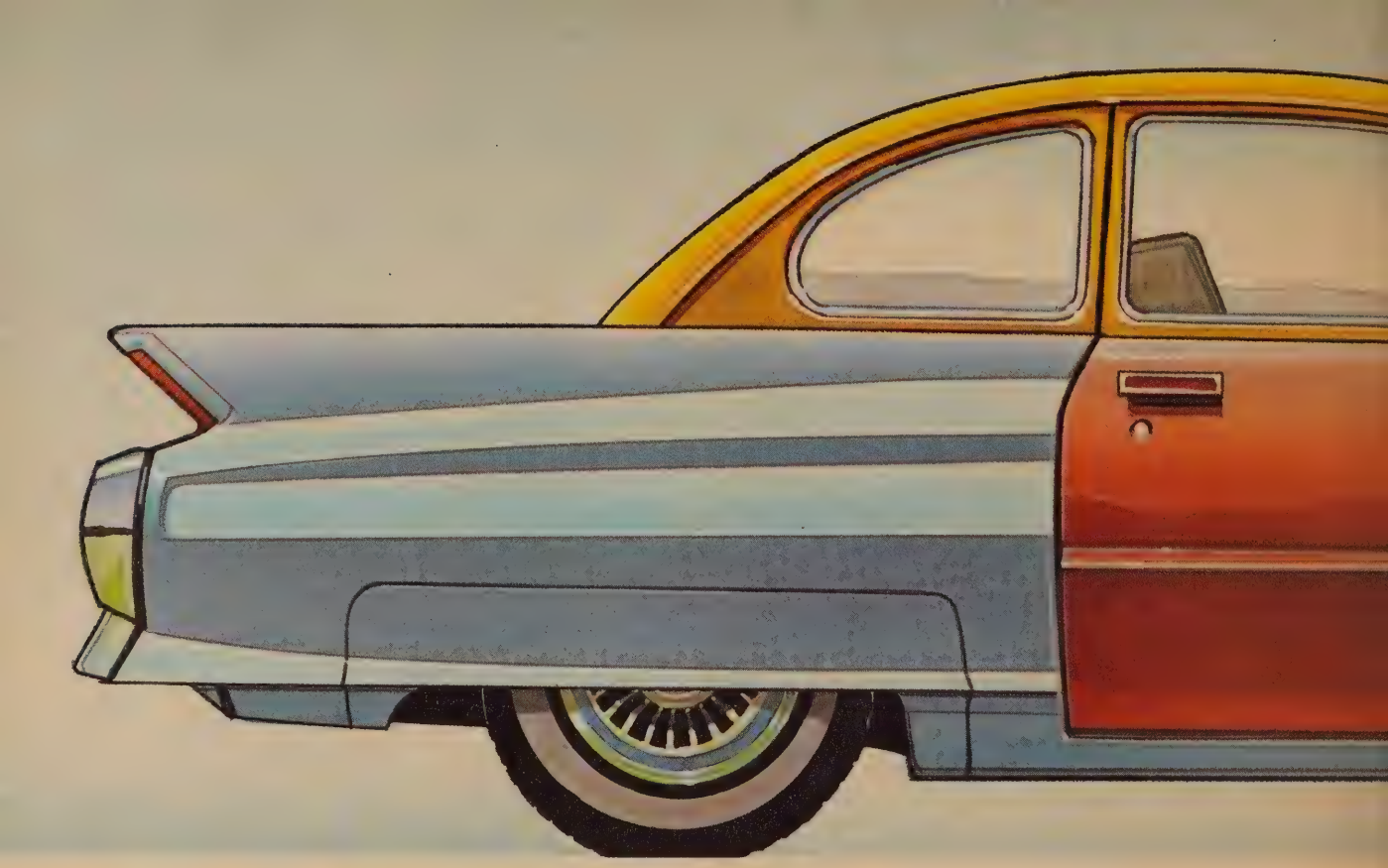
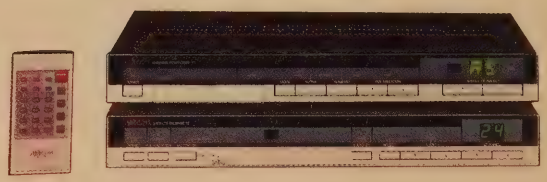


If cars were sold the way most they'd look like this.

Now M/A-COM's Spectrum systems bring perfect compatibility and high performance to the satellite salesroom.

You know how it's been. Match up So-And-So's dish with What's-His-Name's receiver. Pull out Somebody's one-size-fits-all polar mount. Choose Someone Else's feed horn. And hook up Whatchamacallit's downconverter. Presto. It's a system.

Then hope that nothing goes wrong. Because if it does, you know who the customer is going to come to about the warranty. And if What's-His-Name is still in business and will admit that the problem is in his receiver and not in So-And-So's dish or Whatchamacallit's downconverter, then you might get some help.



It doesn't have to be that way. Because M/A-COM has designed its line of Spectrum systems to start performing before they ever leave the salesroom.

Performing with components

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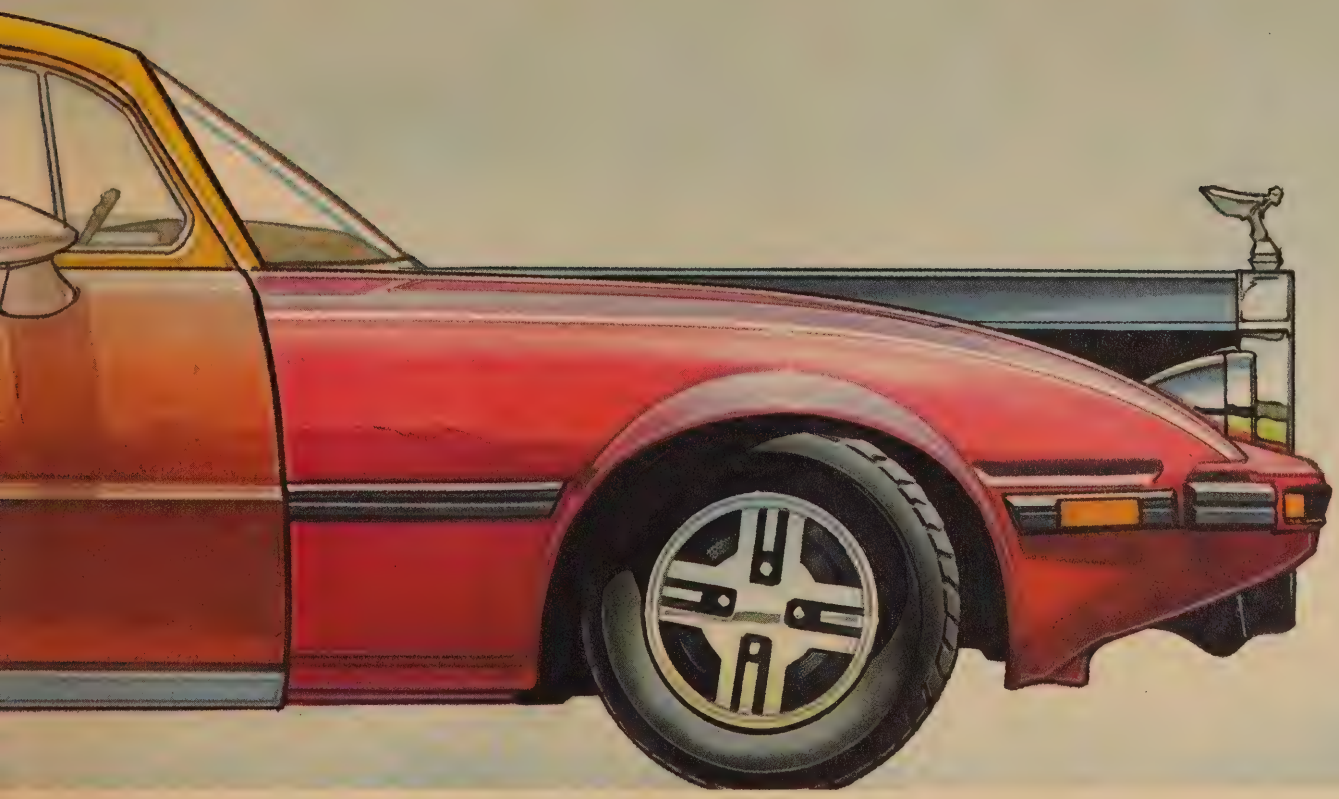

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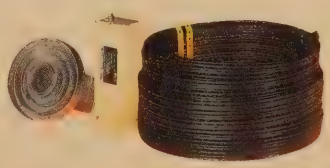

*M/A-COM offers a 5-year limited warranty on all antenna systems, and a 2-year limited warranty on electronic components.

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KU KICKOFF

Super Bowl In Debut Of New Satellite Band

Super Bowl XX is just a short time away and Dick Enberg gives an inside view of the sports broadcast of the year!

By Michael Marley

As 5:15 p.m. (EST) approaches on January 26th in the Louisiana Superdome, players on both sides of the Super Bowl XX field will nervously await the opening kickoff. But the members of the AFC and NFC championship teams won't be the only ones in the huge covered stadium feeling the tension. Up in the NBC-TV broadcast booth, Dick Enberg, the play-by-play man and Super Bowl host, and color commentator Merlin Olsen will grow more emotional as the clock ticks down to the start of play.

"Merlin and I were talking about it just the other day," Enberg said in a lengthy interview with *TV Satellite VideoWorld*. "You always have those butterflies in your stomach. You have butterflies before any broadcast but the Super Bowl is different.

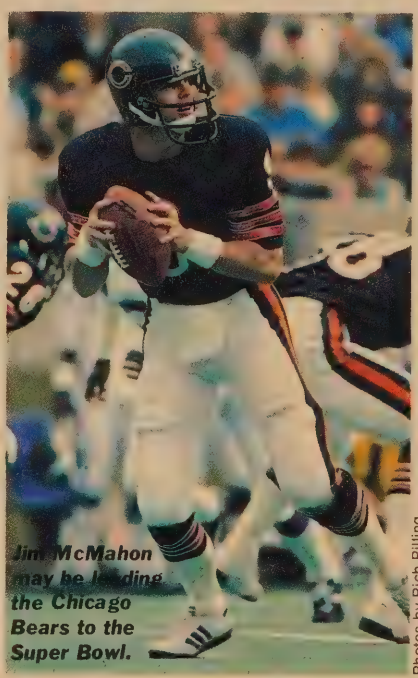
"A Super Bowl is something else. It's a giant thing for everyone involved in the broadcast. You're standing there and your knees are knocking. Merlin's voice will go up an octave. I guess it's just the enormity of it all. If you make a mistake, the whole world is going to know about it.

"It's being televised, I think, to about 25-30 different countries now so it is the whole world. And it boils down to just one day. That makes it different than the World Series or Wimbledon or the NCAA basketball finals," Enberg said. "And perhaps half of your audience has watched maybe one or maybe no other football game all year."

With that in mind, Enberg and the NBC producers and directors attempt to tailor the broadcast to the more casual fans.

"They're telling us we will have an audience of 100 million," Enberg said. "So you have to take care of the hard-core fans. You can't talk down to them but you also have to help the other folks along. You may do a lot of that on your pre-game show.

"I am very conscious of that. What I try to do is to weave in some personal stories about the players. I try to use personal items, the kind of things my mother would hear and say, 'That's nice. I hope he wins the game.'"



Jim McMahon may be leading the Chicago Bears to the Super Bowl.

Photos by Rich Pilling

Super Bowl ratings are always huge and Supe XX will be no exception. But what if New Orleans winds up hosting two teams from the same area? For example, what if the Jets and the Giants make it all the way to the title game? Enberg cites recent sports history.

"I think this World Series, which had two teams (St. Louis and Kansas City) from markets which are large but not gigantic, showed that the big event is the thing," Enberg said. "As for the Super Bowl, it doesn't matter who is in it. It's the Super Bowl."

As for the satellite dish viewers of the big game, they should be interested in knowing that Enberg has recently joined their ranks. A Birdview dish has been installed at his home in northern San Diego County and the announcer can't wait to put it in use.

"We don't have cable in our area," Enberg said, "so I had the dish put in. It'll give me a chance to see a lot of things I wouldn't get otherwise. For instance, I do Angels' baseball and I might be able to see whatever team they might be playing next. I don't think I'll see much pro football or tape many games.

"I have taped some games but my life is too crowded with other things. They wind up sitting in the corner. Also, I'm a person who likes to see things at the time they are happening. And I can always see the highlights of the (NFL) games that I don't do myself."

Most people think of the laid-back Enberg as a Southern California native but he's not. He grew up in Michigan during the '50s and was a real hockey nut. For Enberg, catching hockey (which is not seen on any of the three major networks) is one of the most appealing aspects of owning a dish.

"Really, hockey is one of my very favorite sports. I really think that Wayne Gretzky is the single most exciting athlete in any sport. Growing up, I was a big (Detroit) Red Wings fan, back when they had those teams with Gordie Howe, Terry Sawchuck, Alex Delvecchio and Sid Abel. I used to listen to the old 'Hockey Night In Canada' on radio with (announcer) Foster Hewitt, too. So that's another advantage to having a dish."

There might be another guy who likes dishes in the Super Bowl, too. William "The Refrigerator" Perry, the Chicago Bears' massive media sensation, cleans dishes out rather than watch them. And Enberg was one of the first guys to begin following Perry's exploits.

In fact, Enberg has a terrific Perry story which also happens to be true. The two met at the 1984 Lombardi Award dinner—where Perry was a finalist and Enberg was the master of ceremonies. The whimsical announcer clued the huge player in to how he planned to introduce him. And he told Perry that when he figured he (Enberg) had said enough, he could do "whatever" to end the introduction. The stage was set for a comical scene.

Enberg began by noting Perry's nickname. Then he began to list the various compartments of his body.

The head, Enberg told the audience, was the freezer, where they kept gallons of praline ice cream, and the chest was for beer, milk, and liquids of all sorts. Then Enberg got to the belly and, he noted, that was reserved for T-bone steaks, hamburgers and the like.

"Just after I mentioned three pounds of bacon," Enberg said, "he reached down, grabbed me by the belt and just lifted me over his head and held me there."

And now Enberg marvels at Perry's success.

"You couldn't hype a guy like this," Enberg said. "It's one of those great unplanned occurrences. It's like so many things in life, just a series of circumstances. It couldn't be choreographed. But I remember when I first saw film clips of him, when he was at Clemson. I wasn't used to seeing a big guy move that quickly. Then he goes into the pros and even the team that drafted him talks negatively about him.

"He's a great person to talk to," Enberg said. "And he's got that great, expressive face and smile. He doesn't take himself too seriously. He seems to have an attitude of life is O.K., let's have some fun. I was kind of rooting for him."

Does Enberg think Perry's sudden success as a hulking running back-blocker will cause other NFL teams to try the same thing with their biggest players?

"I'll say this, Joe Walton (Jets' head coach) told me he thinks there is some merit to it. And he's used Mark Gastineau and Joe Klecko the same way. But all it will take is for Perry to fumble inside the five-yard line after the Bears have marched 80 yards. Then the mystique will be clouded.

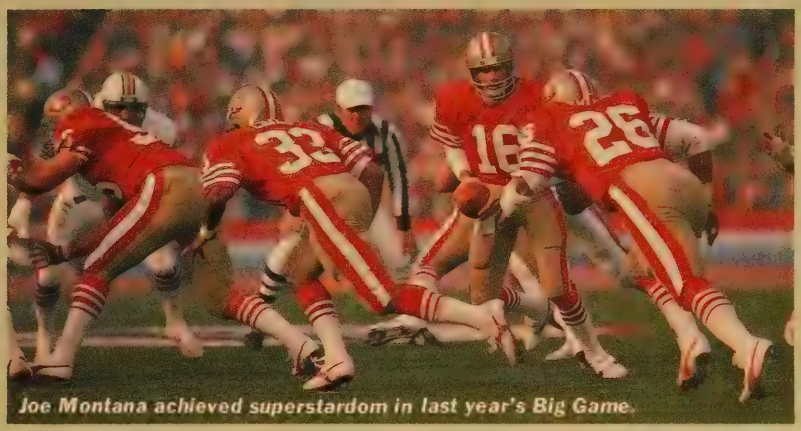
"A 300-pound running back is difficult to stop but what if he coughs up the ball? If he does and it stops a drive, I think we'll see a bit of an about-face. It wouldn't be like John Riggins or Tony Dorsett fumbling. I believe it's a fad."

Enberg is also not a believer in using TV replays to overrule officials' calls, either.

"I am strongly opposed to it. I think pro football should be as imperfect as daily life is. Like Al McGuire said, life isn't perfect and that's why we have surgeons. I think officials might miss one or two percent of their calls but that's why sports is a microcosm of daily life.

"Let me use baseball as an example. When there is a man on third and one out and a guy is

(Continued on page 69)



Joe Montana achieved superstardom in last year's Big Game.

VIEW FROM THE CONTROL ROOM

■ Ken Aagaard, vice-president for operations for NBC Sports, is excited, about the possibility of doing the first Super Bowl in stereo sound.

"We are going to try to do it," Aagaard said. "We did the recent Breeders' Cup in stereo and I'm heading to Korea soon to tell the 1988 Olympic people how much we want to do those things in stereo. I think, that although only a few people have stereo sets now, it will be like color TV.

"It took about four or five years for people to pick up on color TV. I think that, four or five years from now, everyone will have a stereo. We do intend to do the '88 Games in stereo."

All the more reason for NBC and other broadcasters to look with favor upon the Ku-band, which NBC will use for Super Bowl XX.

"We like the K band because you can use your dish in highly-populated areas. With the C band you had to be in a farm some place out in (New) Jersey. Yes, the K band can be affected by things like rain and that caused a 12-minute outtage for us already this year but there are ways of getting around that. But the K band can be used in the big cities. So you can have it around the tall buildings. You can have your system right next to you and you don't have to pay for microwave or a telco linkup.

"Also, the K band gives NBC an edge with more available audio channels to feed. It helps you with your stereo signal."

To bounce the signal to the many foreign nations, NBC will make use of various satellites.

"Theoretically, to get out of the U.S. you use Intelsat but that's not quite the way it works now. Now we can use RCA, Westar, AT&T and other domestic satellites. You can still use Intelsat to go from one country or one continent to another, though," Aagaard said.

The NBC Sports team is gearing up for a Super effort. You won't see them partying along Bourbon Street until the telecast is over.

VIEW FROM YOUR LIVING ROOM

While the Superbowl may be the exclusive turf for the Peacock to strut its Ku stuff, in all probability this year's extravaganza will also make appearances on C-band birds.

The NBC network will no doubt transmit the Superbowl via its rather expensive Ku-band system to its affiliates but that literally leaves a whole world of other viewers that crave this annual super football fix.

The Westar satellites are very popular among networks for transmission of sports programming and either Westar 5 or Westar 4 would be a good bet for retransmission of the Superbowl for this as well as other continents.

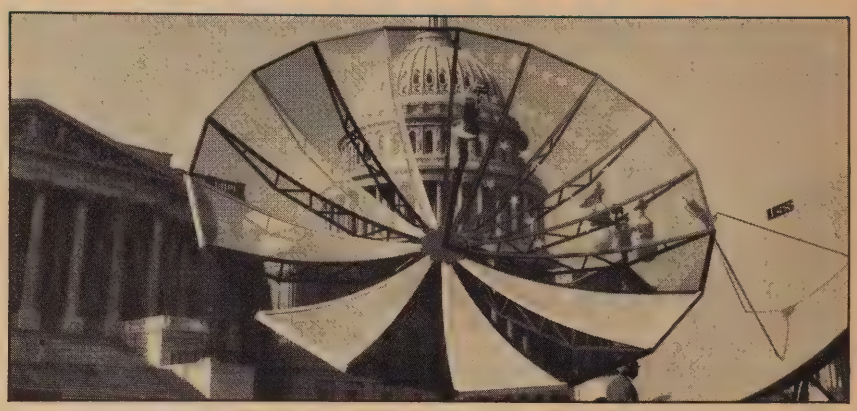
The Armed Forces Radio and Television Service also usually carries a major game such as the Superbowl and they can be found on Satcom 2. NBC still maintains a feed on Satcom 1, transponder eight so that may also be a likely feed for the Super Bowl.

In past years we have spotted the Super Bowl on several different satellites with and without commercials (believe it or not it's actually boring without them). So you may have to hunt a bit, but the big game should not only be on Ku birds but on C-band as well.

EARTH STATION DAY

FLYING HIGH WITH CONGRESS' BACKING

TV Satellite Videoworld joins the Washington celebration highlighting the first anniversary of the day Congress made satellite TV legal.



By Ron Daniels

October 29th is an important day for every dish owner. It was on that date in 1984 that Congress passed the Cable Communications Policy Act that made satellite dish ownership completely legal. Not partially legal but completely. This year, to celebrate the first anniversary of "Satellite Earth Station Day," hundreds of dealers, industry representatives, and just plain dish owners flocked to Washington D.C. Their goals were to impress upon their representatives that satellite TV has become a part of their everyday lives. Most importantly, they definitely do not like the plans by the cable industry and certain programmers to scramble their signals and charge outlandish prices.

As a result of these lobbying effort the number of co-sponsors for the two bills presently pending in the House that would address these vital issues has grown substantially. There are now 50 co-sponsors for H.R. 1840, Cong. Billy Tauzin's bill which would require programmers to deal fairly if signals are scrambled. H.R. 1769, introduced by Cong. Judd Gregg, now has 55 co-sponsors as a result of contacts made during Satellite Earth Station Day. That bill seeks to impose a two-year moratorium on signal scrambling.

The fact that satellite TV has become an important issue on the Hill could be easily told by the legislative heavyweights that appeared at the morning rally on the Mall, opposite the Smithsonian's Air & Space Museum. The heaviest of the heavy was none other than Cong. Tim Wirth of Colorado, head of the Telecommunications subcommittee, who literally has life and death control over the two bills. Wirth announced to the crowd that he would hold hearings on signal scrambling and access by dish owners. This was greeted with wild applause by the gathering for it means that the Tauzin and Gregg bills are beginning the long process toward possible enactment as legislation.

Wirth stated in the chilly Washington air: "From my first days in Congress I have worked for the development of new communications technologies so that the American public—including those in rural areas—could have the best possible access to the electronic information age. The TVRO (Television receive only) industry is a living, breathing example of how the introduction of new communications technology can very quickly bring substantial benefits to the consumer."

The other legislators that spoke before and after Congressman Wirth were as equally emphatic—even more so—regarding the benefits to all from satellite TV. Charlie Rose of North Carolina chimed in, as did Tom Tauke of Iowa, Gregg of New Hampshire, Eugene Chappie of California. Most vociferous in his support of dish owners, however, was that Louisiana firebrand Billy Tauzin. Tauzin spoke with an enthusiasm that had the crowd on its feet. "It was a victory last year," he remarked. "Last year's bill gave people the right to view satellite signals. Don't let anybody mislead. We deregulated Cable but we did not set up a monopoly. Your choice should be decided by price, service, and quality. We are not talking about a free ride. We're talking about paying a fair and reasonable price." Tauzin then told of the plight of the millions of "signal starved" Americans, people who cannot receive any broadcast signals and need satellite technology. He looks at the entire scrambling uproar as a Free Speech, First Amendment issue. "We shouldn't have to worry about what I call an 'Invasion Of The Encryptors.' I deregulated in order to give you a choice—provided you can get a zoning permit," Tauzin joked.

Over 100 dishes were set up around the Capitol area to show legislators and their aides the wonders of satellite television. All over the Mall people moved from dish to dish, just to see the new technology that has all America talking and watching. NCTA President James Mooney sent a letter to all Congressmen relaying the cable industry's belief that "it is politically and otherwise impossible simply to 'make the skies go dark by scrambling signals.'"
Congressman Wirth put it nicely: "All of you here today—many of whom have traveled hundreds of miles to join in this celebration—have reason to be proud. You are the essence of the telecommunications revolution—a true symbol of the benefits of technological diversity."

Happy Satellite Earth Station Day! And many more to come! •

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DO-IT-YOURSELF SURVEY

SIZING UP YOUR SITE

All the facts you need to turn a simple backyard stroll into a site evaluation. Do it *before* you buy your system!

By Floyd Boyd

For their size and bulk satellite receiving antennas, more commonly known as dishes, are very precise instruments and must have a completely clear line of sight to the satellites to function properly.

A variation in alignment of the dish by as little as 1/10th of a degree can radically affect satellite signal reception and ultimately the quality of video on your TV.

Buildings, trees, hills or mountains are natural enemies of the signal broadcast by geosynchronous satellites, and any one of these can impair or completely block reception of satellite signals at your location.

Before you can decide on the satellite system you are going to buy your local dealer will, and indeed should, recommend a "site check," or "survey." Because of natural and manmade objects not all locations are suited for and some can't even receive satellite signals.

The type of signal broadcast by the satellites must have a direct and clear line of sight to your dish. Microwave signals, the type broadcast by the satellites, will not even penetrate foliage on trees or bushes, and definitely will not pass through buildings, mountains or hills.

Even in areas that seem wide open a natural or manmade object would be blocking the satellite signal path so a site check is imperative.

If you are considering the purchase of a home satellite system you may have already contacted a local dealer and he has probably already suggested a site survey be conducted at your location. He also may have quoted you a figure of between $25 and $100, applicable to your system purchase in many cases, to conduct the survey. It's well worth the money spent to have a site survey conducted especially if you are in urban and suburban areas.

Photo by Sean Kevin Gaffney

Before your dish can be installed a thorough site survey must be done.

A dealer conducted site survey should basically consist of two parts. The first is a very basic inspection of your proposed location for the dish, and the second is a check for "TI" or terrestrial interference. The latter should be conducted only by qualified technicians with the proper test equipment.

The ideal dealer-conducted site survey would be the actual placement of a portable satellite dish at your location which not only tells you that you can receive the full compliment of satellite signals, but also if your area is subject to TI.

While a dealer should ultimately conduct a site survey you can do a preliminary survey armed only with about $5 worth of very basic gear.

The equipment you will need is a compass and a protractor or "inclinometer," which is sometimes called a carpenter's protractor. An inclinometer is rather expensive for what may amount to a one-time use so a plain old child's protractor, available at most department stores and costing about 50 cents is an adequate substitute.

Keep in mind that any site survey

(Continued on page 68)

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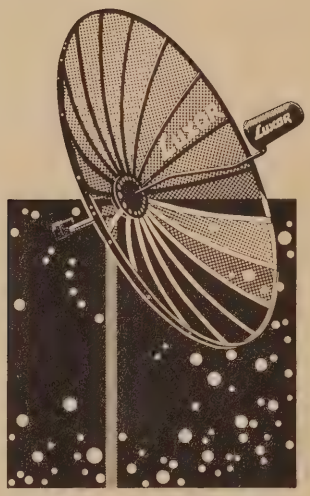

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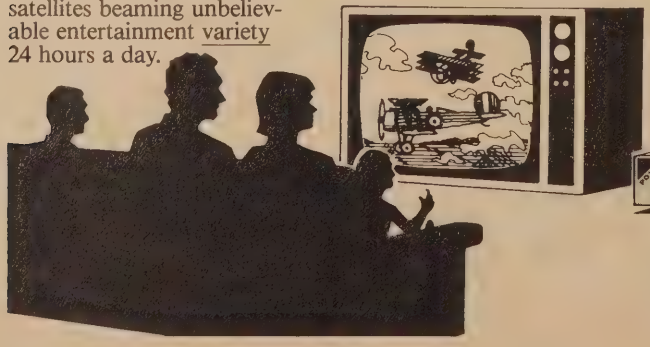

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ACTUATORS & CONTROLLERS

READY, AIM, TRACK!

Understanding The Devices That Move and Aim Your Dish

By Robert Banques

Whether you call it an actuator or a satellite dish positioner the device that moves the dish, and aims it at the satellites is one of the key components of any system.

The actuator, or "linear actuator" to be a bit more precise, is a pretty straightforward piece of gear. It is basically an electrically driven telescoping arm that extends or retracts to push and pull the dish to the desired location.

The linear actuator was originally developed for applications far removed from the home satellite industry including opening and closing greenhouse window vents, raising and lowering and positioning hospital beds, leveling recreational vehicles plus a myriad of other uses. It came to the home satellite system when fixed systems were no longer desireable as programmers began to flood the video channels on the dozen or more satellites now visible to most of North America.

The actuator was an off-the-shelf item that was easily fitted to the typical satellite dish mount with few modifications. Eventually the polar mount became a standard of the industry and most mounts were fitted with inexpensive brackets that would accept almost any linear actuator available.

The actuator itself is only half the story because without some means

Photo by Edgar Payne.

To move the dish, a linear actuator and controller (right) are absolute necessities.

to tell the actuator which direction and how far it should move to locate satellites the motorized actuator in and of itself was useless. Enter the actuator controller.

The controller at first was a very simple device with which the user could simply move a toggle switch to the left or right and the actuator would raise or lower the dish. Finding a satellite with this simple device was a bit more challenging and usually the user would tune their receiver to an active transponder on a specific satellite they were looking for.

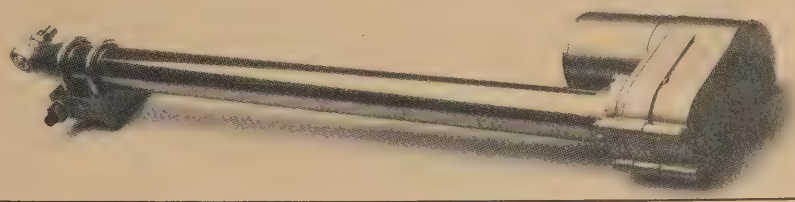
That was fine if you didn't mind spending several minutes to locate various satellites to look for programming which usually meant the user lost the first few minutes of a program. That shortcoming was soon rectified with the addition of a numerical readout that would give the user an arbitrary number for each satellite location. To accomplish that task a "feedback" system had to be incorporated into the actuator itself which would count the number of revolutions as the motor turned (and extended the arm). This would give the numerical readout, located in the home, that indicated the relative position of the dish. Sounds complicated doesn't it? Fortunately controllers have evolved to the point that they now are fully automatic.

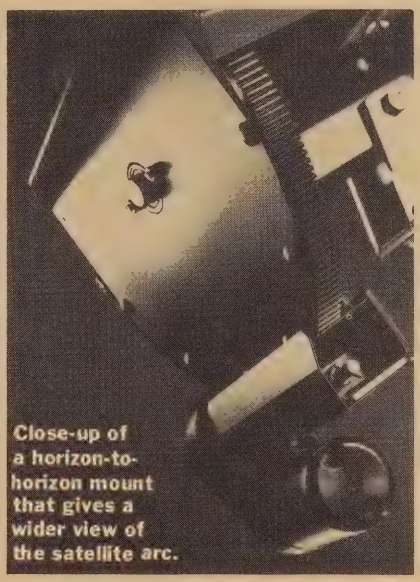
The key to any actuator/controller combination, however, still remains in this feedback system, regardless of how high-tech controllers have become. The reason for this is simple. Not all actuator manufacturers, and there is a very small group in this category, produce matching controllers. The same is true for controller manufacturers, and this is a very large group, who do not manufacture their own actuators. The result is that some controllers will only work with certain actuators and that is dependent on the type of feedback system used in the actuator.

To understand this system you have to realize just how critical proper alignment of the dish to the satellite arc is. The Clarke Belt or satellite arc is located about 22,300 miles directly over the Earth's equator. The satellites located at this precise point rotate at the same speed as the Earth thus appearing to be stationary, or in the jargon of the industry "geostationary" or "geosynchronous."

The satellite dish must be aimed directly at the satellite(s) in order to receive the optimum signal emanating from it. Imagine trying to hit a target 22,300 miles away smaller than the period at the end of this sentence! Aiming as little as one degree off the satellite can result in being off the target satellite by nearly 500 miles which results in poor video quality in the typical system. The typical dish "sees" only a very small fraction of the sky or geosynchronous satellite arc at any one point so aiming the dish accurately is quite an important function of any actuator and controller combination.

Luxor's linear actuator is similar to the drives on most dishes.





Close-up of a horizon-to-horizon mount that gives a wider view of the satellite arc.

To achieve this aiming precision the actuator and controller must work in concert and work within some very close tolerances. This is where the actuator's feedback system comes into play.

There are basically six different feedback or "sensor" units used in actuator systems today. They are the "Reed" Switch, Hall Effect, Photo or Optoelectric couplers, Micro Switch, Magnetic Counters and Potentionmeter.

Reed Switch and Hall Effect

A rotor bearing magnets at each quarter turn is attached to the motor. As it turns, with the motor, the magnet closes a switch with each pass producing a pulse or a count.

The pulses (one for each quarter turn of the rotor) are sent to the indoor controller and are counted. In a preprogrammable system the actuator will stop when a desired count has been reached. This is usually displayed as two or three numbers given by an LED readout on the face of the controller. The numbers are purely arbitrary and are based strictly on the interplay between the actuator sensor and your controller. A neighbor down the street with the same actuator and controller may have an entirely different set of numbers for the same satellite positions.

The count is dependent on the pulse rate or "Pulses Per Inches" which is dependent on the "stroke length" of your actuator. Actuator stroke lengths vary between 18 and 56 inches and pulse rates will vary accordingly between 20 and 40 PPTs.

For example if you are using a 24 inch actuator and there are 800 pulses for the full stroke the PPI rate will be about 33.3. This is not really important for the average consumer to know but it does give you an idea of the sensor or feedback mechanics and electronics involved.

In the case of the Reed Switch, a mechanical device that is the opening and closing the switch, is involved. Eventually the switch will wear out and have to be replaced. Failure of the Reed switch can cause the controller to lose track of where it is at and ultimately cause damage to the actuator or motor.

The Hall Effect basically replaces the Reed Switch component in the system with a transistor but because of some inherent drawbacks to the system it is not in common use today.

Micro Switch

The micro switch incorporates a rotating cam that closes the contacts on a switch with each pass of one of the cam lobes. It is a relatively simple arrangement but is subject to failure after a million or so operating cycles. If the actuator sees heavy use the life expectancy of this type of sensor is relatively short.

Photo Coupler

The photo or optoelectric coupler is coming into favor among actuator manufacturers because of its speed

(Continued on page 72)

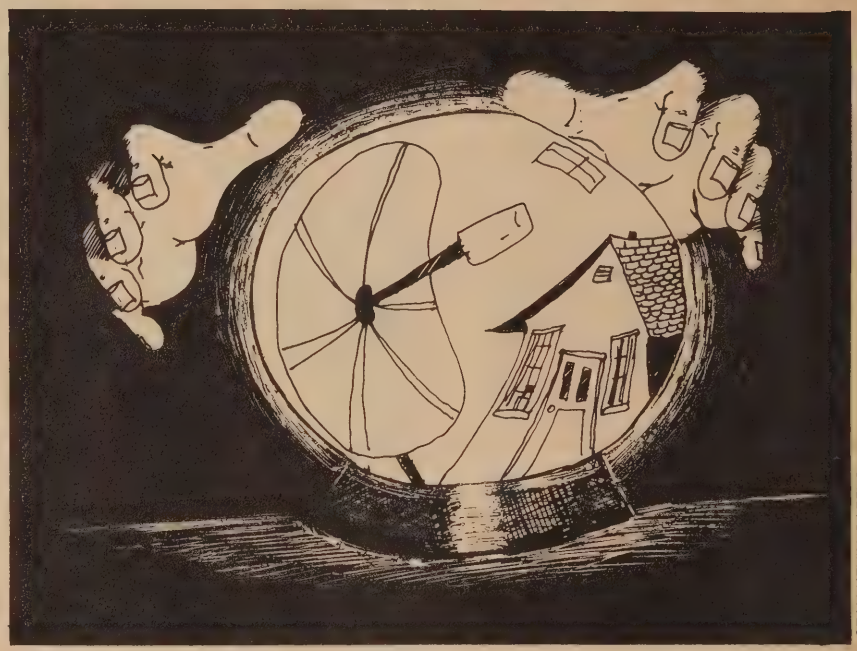
'86 EQUIPMENT FORECAST

Predictions for 10 new satellite TV product innovations occurring in the New Year.

By Anthony T. Easton

1985 is history! It was an exciting year. 1985 saw the introduction of the first smart satellite TV system which could find the satellite on its own. It was the year of the GE Command Center—a device that eliminates the coffee table clutter of multiple infrared remote control units. 1985 also gave us Ku-band satellites and block receiver systems for everyone. 1985 also saw the major acceptance of 6 foot dishes nationwide, and even the tiny 4-1/2 foot models made some sales in many parts of the country.

So what's in store for us this year? What kinds of technical innovations can we expect to see in 1986?



SEAN KEVIN GAFFNEY

Our Crystal Ball Forecast

We see 10 new home satellite television product innovations occurring in 1986. Expect to see most of them introduced in Chicago at the Summer Consumer Electronics Show this coming June.

1) Infrared command centers

Hot on the heels of GE's success, Steve Wozniak's Cloud 9 company is expected to be a major player in the command center business. Smart handheld infrared terminals that control all dish functions *and* TV, cable tuner, stereo and home security/lighting systems should become commonplace by the end of the year. Look for prices to fall to under $100 for basic units.

2) Low threshold receivers

Low threshold receivers are on the near horizon. Uniden, Anderson Scientific, and Hytek are among a number of companies feverishly working on this one. A 3db improvement (lowering) of IF threshold means the same thing as a doubling of satellite transponder power, or a *reduction in dish size* from, say, 6 feet to 4 feet. When dishes hit the 4-foot size even the most limited roof can easily handle a lightweight dish.

3) Two axis motor drives w/auto-satellite-seeking

Hytek did it first with their new auto-satellite-seeking receiver and two-axis motorized dish mount. Simply depress the "setup" button and the system goes off hunting for the first satellite. Refinements to this will come fast and furious. Expect to see ring-mount dishes with rotating lazysusan-like mounts and advanced receivers which automatically chart all the heavens and all satellites automatically. Prices for these premium systems should run in the $2,500 to $3,500 range, retail, for the next several years. This breakthrough will do more to stimulate home satellite TV growth than any other that our crystal ball foresees.

4) Pop-open antennas for instant installations

The Luly fabric antenna has been around since 1981. This author had a Luly 12 foot model on his San Francisco roof as early as 1982. The Toki 9 foot version of this dish is now being shipped to a new generation of buyers. The Luly is portable and easy to use. And it's a snap to put up. You can have it running in under 5 minutes. Look for similar quick-to-install antennas to hit the market later this year. Snap-together molded plastic dishes on motorized ring mounts and quick-lock sectioned aluminum dishes should become more common as the giant dishes of yesteryear begin to disappear.

5) TV Sets with built-in satellite receivers

On the drawing boards for a number of months by several companies, Zenith, Luxor and GE could well introduce new top-of-the-line projection television sets with built-in satellite receivers as well as stereo MTS-TV sound decoders and R-G-B monitors. Overall picture and sound quality of all satellite receiver systems should improve as the competition heats up.

6) Ku-band takes off

Around for a number of years now, Ku-band satellites have only recently begun to carry full-time satellite television programming. With NBC now fully committed to feed its network via Ku-band satellites and

(Continued on page 74)

Now there's a satellite system worthy of satellite technology.

It takes some pretty high technology to get a satellite to transmit TV signals.

So, you'd think that a home system that receives those signals should be on the same technical level. But, frankly, too few companies have the resources and experience to achieve this. Let alone a worldwide reputation for quality to back it up.

Except for Kenwood.

We put 25 years of electronics know-how to work and developed the most advanced TVRO on the market: the computerized Kenwood Satellite Receiving System. Great looking, feature-packed equipment that's easier to sell because it's simpler to operate.

Just touch a button, and the KSR-1000 Satellite Receiver instantly selects one of 18 satellites previously memorized by the compatible KSP-1000 Satellite Positioner. Simultaneously, the KSR-1000's computer automatically positions the antenna and adjusts the polarity and skew. Simply turn a dial to tune the transponder frequency and that's it. No calculations. And no complications.

And, of course, it comes with an infrared remote control.

What's more, the KSR-1000 has all of Kenwood's famous automatically controlled audio goodies. Like built-in Dolby B* noise reduction and Discrete Stereo, MPX and Matrix Stereo reception, so your customers can enjoy fuller, richer sounding music. The KSR-1000 also features a two channel "parental lock" button that prevents kids from watching adult channels.

Put all this together with Kenwood's LNB-1000 Low Noise Block Down Converter and a KSA-900 Antenna Actuator, and you have a matched system to sell that's simply miles above the competition.

Because Kenwood is thinking on a higher level.

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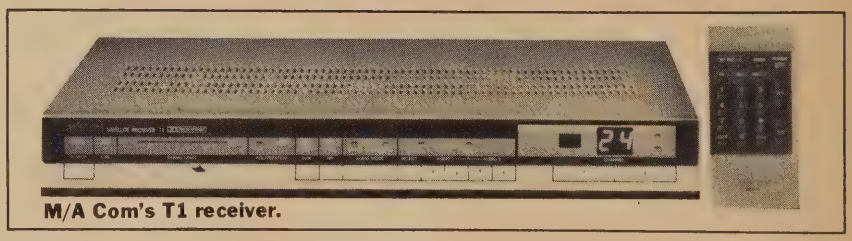
RECEIVER SHOCK!

NOW IS THE TIME TO TRADE

If your receiver is more than two years old, you should seriously consider buying a new one!



M/A Com's T1 receiver.

By Robert Angus

I was reminiscing the other day with a friend, a veteran of the early days of the hi-fi business in New York. "In those days," he recalled, "I'd see the same faces every Saturday morning. They'd come over on the ferries from New Jersey to see what was new in amplifiers or loudspeakers or turntables. And the truth is that there *was* something new, almost every Saturday. Some of those guys, the ones who had to have the very latest and best equipment, would buy a new phono cartridge almost every other week, a new tuner two or three times a year."

Well, the satellite business isn't *quite* like that, but the changes in the last year or two have come thick and fast. Several have been so dramatic, in fact, that for the perfectionist it's reasonable to say that if a system is two years old or more, it's time to think about upgrading the receiver.

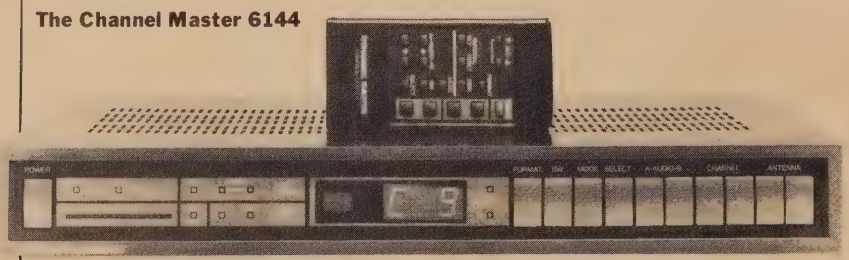
And not just to have the latest thing. Some of these developments, like the mass production and dramatic price reductions on block downconversion systems have not only affected performance, but also have made possible the use of multiple receivers in a single system. Some have brought Ku-band capability to systems without the owners even being aware that they can tune in to the small satellites (with the addition of a proper feedhorn, of course). Microprocessors not only remember details like the proper stereo processing for The Movie Channel or HTN, but make receivers easy for any member of the family to use (a decidedly mixed blessing, according to some system owners). Automatic Fine Tuning can eliminate the need for fiddling with polarization. And so on.

But we're getting ahead of ourselves. If your system is two years or more old, chances are that you were so delighted with the crystal clear pictures you got and the fact that your system could deliver 100 channels that you paid little attention to how difficult it was for others to tune in a desired channel, or to the audio quality coming off some of the transponders. You were not alone. Manufacturers of that day—it seems almost like another era now—were intent on producing as many beautiful pictures as possible and usually at the lowest possible price. Of the half-million or so systems then in use, they could count on the owners of most to be willing to put up with receiver drift, polarization shifts which meant going to the dish and rotating the feedhorn assembly, hand cranking and two-person tuning for each satellite change. We didn't know then that it wasn't necessary—and neither did most manufacturers.

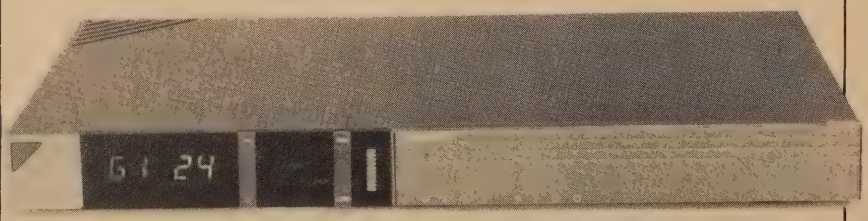
Another consideration: then as now, home satellite packages were conceived of largely as *systems*, with a given receiver designed for use with a specific LNA (or later LNB). Although actuators and drive systems were being retrofitted to older systems even then, new ones were intended for use with specific receivers which even then began to include polarization switches and controls for a remote drive. Manufacturers were none too keen about customers who wanted to buy only a receiver and not their total offering; or to scrap their receiver in favor of someone else's.

Therefore, there was no rush to

The Channel Master 6144



Luxor 9900



Two examples of the new high-tech satellite receivers.

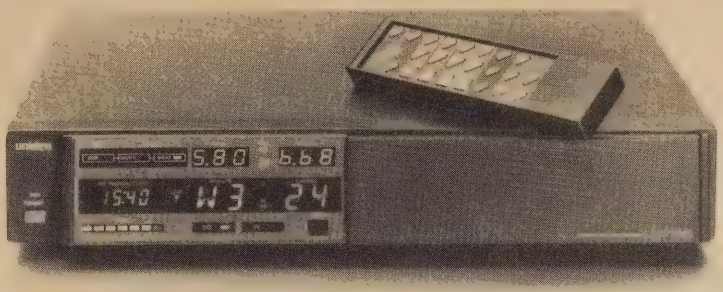
standardize interface connections and specifications which would facilitate such replacements, as there had been in the early audio days. Some polarizers required five volts, others 17. Some were block downconversion systems and others were single down-conversion. Even within the block downconversion group and even today, although an input frequency range of 950-1450 mHz is becoming the standard, there are enough exceptions and variations to cause plenty of headaches. We'll talk more about the standards problem in a few minutes.

First, should you consider upgrading? If so, why?

If your system is working well and you're perfectly satisfied both with its performance and ease of operation, the answer to the first question is no. If it ain't broke, don't fix it. Unless, of course, you want some of the features it didn't include, like tunable stereo audio, automatic frequency control, illuminated metering and so

"To find out for sure, pay a visit to your local satellite dealer and ask to see one of the new 'smart' receivers. Read the product literature and see what's being offered."

on. To find out for sure, pay a visit to your neighborhood satellite dealer and ask to see one of the new "smart" receivers, such as the Kenwood KSR-1000, Homesat, Luxor 9900, MA/Com or Channel Master top-of-the-line units. Read the product literature and see what's being offered this year in the way of features that weren't available when you bought your system, then decide how much each of these performance or convenience features is worth to you. After you've read the literature, ask the salesman to demonstrate or explain those features which interest you. Take the literature—and preferably a set of technical specifications for any piece you're considering buying—home with you for further consideration and study. Chances are some questions will occur to you, and you'll have an opportunity to compare the specifications for the new equipment with those for the units which will have to interface with it. Check particularly to see that the electrical specs for signal levels, frequency response, voltages and the like match, and that the plugs and connectors are compatible. Or if



Uniden's new UST 7000 combines receiver and positioner functions in one unit.

The Micro Eye from BEL-Tronics has digital tuning and accepts matrix and discrete stereo.

they're not exactly the same, that they can be adapted with a plug or patch cord without much trouble. A Radio Shack or other parts catalogue which shows a wide selection of plugs and adapters can be very helpful here.

If you're still in any doubt, when you go back to the store, take a list of the other components in your home satellite chain with you. If you're dealing with the person who put the system in, he'll know whether a given user-friendly receiver can be substituted for your present model without a lot of fuss. If it's a dealer new to you, he'll want to know what the LNA or LNB are, whether there are any other components in the chain such as a stereo processor or descrambler, and how you're modulating the signal for your TV set. Most of the new high-tech receivers, incidentally, have Channel 3/4 modulators built in, which may enable you to eliminate an external modulator or the need to use a VCR tuner for that purpose.

As you may have guessed from the above, changing satellite receivers usually isn't as simple as taking an old tuner, amp or receiver out of your stereo system and putting in a new one. Therefore, unless you're reasonably adept at do-it-yourself electronics and reading instruction manuals, it may pay you to have the dealer do the work. That way, if anything goes wrong, you have someone other than yourself to blame.

In fact, most of the new "thinking" receivers are designed as parts of complete satellite systems and not designed to be sold separately. In fact, when I asked the leading manufacturers for purposes of this article for the retail prices on their receivers alone, they all told me they could not do so; that dealers were free to set their own prices, and in any case, the units were parts of complete systems selling for $3,000 or so. Thus you may have to talk your dealer into selling the unit you want separate from the system of which it is a part.

Which brings us to the matter of money. After the price you paid in 1983 or earlier for even a very primitive system, today's "smart" receivers are going to seem like real bargains. Most dealers who agree to sell them separately charge $800 to $1,000 or so, depending on brand and assumiong that they don't have to do any work. That's about what a very rudimentary receiver would have run you in 1983 and perhaps half what it would have cost a few years earlier. On the other hand, when you go to sell the receiver you paid $1,000 for, you shouldn't be surprised when the dealer offers you $200 to $300 on a trade-in.

If the unit is in good working condition, chances are you can sell it yourself for that much or a bit more, particularly if you can scrounge up the rest of the hardware needed to complete a system. Newcomers to satellite may be hesitant about buying a single component without knowing what the rest of a system might cost. Another possibility is to keep the old receiver yourself, either for use at a summer home or your place of business; or as a gift to some other member of the family. If you're lucky enough to have a block downconversion-type receiver, you may be able to use it along with your new receiver to provide alternate-

(Continued on page 76)

Winterize Your Dish

NEITHER SNOW NOR SLEET...

Nor anything else winter can think of can stop your dish from its appointed rounds—if you follow these tips.

By Ron Daniels

Jack Frost can play some pretty nasty tricks on a satellite system. He can leave you out in the cold but with a bit of care you can defeat this wily adversary.

Most areas of the nation are prone to some form of freezing precipitation. In areas such as the Deep South, where they get very little snow accumulation, they do get the other enemy of any system—ice.

Ice and snow can cause serious damage to both the dish and mount, not to mention the electronic components located at the dish.

A good installer will see to it that the electronic parts of the system are well protected against all elements, but it will be up to you to provide preventative maintenance once the installation is completed.

Whether a dish is a solid, mesh, or perforated, snow and ice will accumulate on them during severe snow or ice storms.

Snow and ice buildup changes the parabolic reflecting surface quite significantly so the immediate effect is a degradation in video quality. This will show up as sparklies in light cases to complete picture loss in more serious ones.

The first thing you should remember if there has been a severe or even moderate snow or ice storm in your area is to check out the dish before you do anything else.

Some satellite system owners will make the mistake of trying to move the dish believing that it has been knocked out of alignment by a storm. Don't even attempt to use the actuator if you have noticed a loss of video quality during or after a snow or ice storm.

If there is a heavy layer of ice or snow on the dish it could add hundreds of pounds to the weight of the entire structure, and is almost a sure-fire way to burn out an actuator motor if you attempt to lift this added weight with the actuator. Even if the actuator could move the dish with the added weight you may well damage the dish or supporting structure. Therefore the best practice is don't do anything until you've done an on-site inspection of the dish.

If the dish was set on the lowest satellite you may find the entire bottom lip of the dish buried in snow. Satellite dish antennas have a strange habit of acting much like a snow fence, causing accumulation of snow in front of them rather than behind. This tendency to gather snow in front sometimes will bury the front lip of the dish. Snow that has accumulated on the dish also has a tendency to pile up in front of the dish as the dish heats up in the morning sun causing something of a mini-avalanche.

Resolving snow buildup in front of the dish is a pretty straightforward procedure and involves simply removing the offending pile with a shovel. Be careful when you get near the lip of the dish not to damage it with the shovel.

Snow buildup on the dish itself needs to be removed *CAREFULLY!*

A long handled broom, or window-washing-type broom can be used to remove the snow, but you must take into consideration the type of material the dish is made of.

If it is a spun aluminum, fiberglass, or steel dish obviously you don't have to be as gentle when removing snow. If it is an expanded mesh due care must be taken. Any ding or dent in the surface of a dish tends to reduce its efficiency. Remove the snow in layers working your way down to the dish surface. Never bang on the edge of any dish to remove snow—always remove it slowly and carefully, particularly when you get close to the surface.

Sometimes you can leave a light layer of snow on the dish and the sun will melt the rest of the offending substance off the surface.

You should also check the mount and actuator to see if there is any snow or ice buildup that may be

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jamming the moving parts. If there is be very careful when removing it, and make sure all moving parts are free and clear of snow and ice before attempting to run your actuator.

Ice can be more damaging than snow and is somewhat more difficult to remove. Ice weighs more than snow and it takes less to cause a serious loading factor on both the dish and mount. The actuator could also be adversely affected by this extra loading so again don't do anything until you have either removed the ice or it has melted off the surface and moving parts of the dish.

A common mistake most people will make in trying to remove ice from a dish is to bang at it until it breaks up into nice little sheets. Some solid dishes can take a certain amount of this type of punishment, meshes can't and neither should.

Don't ever bang any object against a dish under any circumstances whether it be solid, mesh, or perforated.

Even in the dead of winter the dish surface (especially if it's black) will absorb a certain amount of the sun's rays causing the ice to melt slightly at the surface of the dish. Wait until the sun is shining almost directly into the dish and let it warm up for a few minutes. Then you can take an automobile-type window scraper and score the ice (don't gouge at it or go all the way to the surface of the dish) and the ice should break up easily into smaller pieces that will slide off.

If it is a mesh dish that has been coated with ice that cannot be removed by this method—and the buildup is substantial—then you may have to wait until nature takes its course and melts the ice off.

In extremely cold conditions ice tends to sublimate—turn from a solid directly to a gas—so if it does not appear to be melting it could be sublimating and eventually the dish will clear itself of ice. Again do not attempt to move the dish with the actuator if there is a buildup of ice.

In some of the colder climates some system owners have used heat tape to keep their dishes clear of ice and snow. This requires a lot of know-how to install properly, especially on a dish, and should not be attempted without expert guidance. If not installed properly heat tape could cause serious damage to the dish and more importantly to a person who may accidently come in contact with it.

Normally heat tape is reserved for very large satellite dish installations and is not recommended for the small diameter home satellite system antenna.

In most cases Mother Nature will take care of cleaning snow and ice off your dish, but if you can't wait be very careful when attempting to remove it.

- Never use rock salt or chemicals on the dish to remove ice and snow; these could lead to serious corrosion problems and eventually could destroy the dish surface.
- Never use a heavy metal object, such as a hammer or chisel, to break up ice. Dents and surface irregularities that can be caused by excessive force will result in video degradation.
- Always remove snow in layers or small amounts. Never use a shovel to remove snow from the dish surface and be careful when using it to remove accumulations in front of the dish.
- Remove as much excess snow as possible from the surface of the dish but leave a small layer and allow the sun to complete the job just to insure that you don't damage the dish.

As a reminder: when you get up in the morning, or notice the signal has deteriorated during a snowfall, never attempt to move the dish with the actuator until you have checked out the dish itself for snow or ice accumulations.

With these few hints you should be able to weather almost any storm that should be thrown at your dish this winter. •

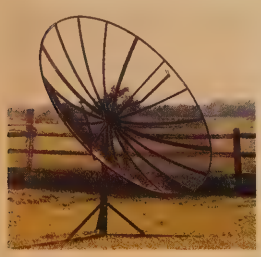
Now Arcfinder Is Giving You The Works

(The Works That Works Best For You!)

If you've been overwhelmed by the multitude of manufacturers and their products in the satellite home video industry, Arcfinder has made your best choice easy! Now with a complete line of satellite system components, Arcfinder offers an affordable package featuring state-of-the-art technology for picture quality that will satisfy even the most discriminating viewer.

Antenna Control System - The engineering superiority that goes into the Arcfinder antenna control system sets it apart from all the others. Being designed for simplicity, the antenna control provides the customer with dependable trouble free operation. There can be no memory loss ever. Nor miscounting of digital pulses. And to insure many years of continuous operation, Arcfinder has developed a unique means for preventing rust and freeze-ups in the actuator drive. Finally, one of the most pronounced attributes of the Arcfinder antenna control system, is the easy installation due to its basic four-wire connection.

Arcfinder Antenna - Arcfinder's nine foot satellite antenna dish is designed to do more than the others. First, it gathers satellite signals and brings them to you not only distortion free, but also with a superior level of clarity. Second, the tough, rigid construction allows the true parabolic curvature to maintain accuracy, year after year. Third, the four durable steel panels are individually screwed and may be replaced separately and easily in the event of vandalism or on-site accident. Finally, the Arcfinder satellite dish is designed for a long lasting, attractive appearance. Its edges are capped for a water-tight seal and the black see-through steel mesh will enhance any landscape.



Horizon Mount - Arcfinder's hidden mount allows perfect arc tracking. All steel gears will insure years of trouble-free use, and a special backlash adjustment maintains pinpoint accuracy. The neat, clean and attractive design, when combined with Arcfinders antenna dish will appeal to even the most discriminating taste.

State of the Art Receiver - Arcfinder has set a new standard in satellite receivers. Compare the crisp, clear, colorful video quality, before found only in the expensive commercial receivers. By utilizing the latest concepts in solid state technology, Arcfinder provides trouble-free viewing which will earn your confidence. Synthesized tuning assures you of uninterrupted clarity, and video fine tuning offsets interference in T.I. affected areas. Enjoy single or multiple receiver installation with the convenience of block down conversion.

Low Noise Amplifier - It's no secret that many manufacturers are producing LNA's. It's also known that most LNA's generally perform the same function comparably well due to increased and aggressive competition. Arcfinder's LNA, however, not only possesses high tech, element protected circuitry and performance, but also is distinguished by one other very important consideration . . . economy! Arcfinder's engineering magic has made it possible to obtain the same high quality isolation enjoyed by other high priced competitors without their costly pricetag.

Full Viewing Pleasure - Arcfinder brings you satellite system components that are destined to be your first viewing choice. By combining the latest technology with engineering efficiency, Arcfinder is making them available to you at a comparatively low cost. A speedy ship in/ship out is Arcfinder's policy insuring you of prompt, hassle-free servicing, and they stand behind their products completely. Arcfinder has given the system and the support that works best...for your unprecedented viewing pleasure.

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The SBR-6100 is a totally new concept in system integration. It incorporates a microprocessor controlled digital dish positioner, a synthesized stereo tuner, full-function remote control, and total-recall memory.

Total-recall memory gives direct access to any satellite/transponder combination and automatically selects dish position, channel, skew, polarity, audio band width and stereo selection. All functions are actuated from a single remote control.

Block Downconversion is pre-wired with amplifier and splitter. It will accept an additional tuner for separate channel viewing on a companion receiver.

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The Supporting Cast

A

C

B

D

A All KLM systems come standard equipped with the time-tested black radar mesh antennas. You have a choice of 6, 8, and 11-foot sizes. The 8 and 11-foot antennas utilize an aircraft-quality perimeter cable to secure the critical parabolic shape.

B The H2H is a true horizon-to-horizon mount. With this mount, your system has a full 180° of rotation. The mount is fully factory-assembled, and its design is impervious to icing, having been tested repeatedly at −50° F.

C In one container, everything you'll need from mount and antenna, feed horn and amplifying assembly, weather-sealed cable and tuner/positioner control station. You will note from the illustration that all major components are factory preassembled.

A Low Cost, High-Quality Option

D The KLM Sky Eye X is available in either single or Block Downconversion. Every aspect of satellite and channel selection is at your fingertips. The lighted dial and clearly designated control knobs make tuning easy and positive.

The Aimer II is semi-programmable, low-profile, and completely self-contained with a built-in power supply. Exclusive fast pass allows you to input any satellite location in less than 12 seconds.

KLM Electronics Inc.

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SCRAMBLING SCORECARD

Those who want to zap your favorite shows and those who say they never will.

By Anthony T. Easton

Back in the fall of last year, we first looked into the scrambling debate. We concluded that, while HBO was moving ahead with its scrambling project, and some other pay-movie programmers such as Showtime/TMC might scramble in 1987, most satellite-fed television channels would probably not scramble.

A lot of events have since occurred, prompting us to visit this turbulent topic once again. We think that you'll be pleasantly surprised by our conclusions.

The scrambling issue is one of the most debated and heated items going on right now. And everybody's in the act: Congress, SPACE, the cable companies, the programmers, U.S. Department of Justice, and hundreds of thousands of individuals like you and me throughout the country.

Scrambling is a downright emotional issue for many people, and it affects a lot of things, but mostly it is scaring people away from satellite TV. The cable companies' goal, of course, is to throw a monkey wrench in the development of the backyard dish movement. Every dish install might mean a cable TV disconnect. And every cable disconnect means a loss in book value of $1,000 to the cable company.

Confusion and uncertainty always trouble consumers. Without the spectre of scrambling hanging over people's heads, Americans would be buying dishes at twice the current rate.

Scrambling represents big money. We figure that if an average cable television company picks up 10 satellite feeds at its headend and all 10 of these channels scramble, then 10 descramblers with (say) five back-up descramblers are needed. This assumes that several different scrambling systems appear in the marketplace: MaCom's Videocipher, Telease's MAAST, and Scientific Atlanta's B-MAC. In fact, more incompatible systems are likely to appear if today's mess continues.

At a rough cost of $1,500 per unit, the average cable company can expect to spend $22,500 per headend. Multiply that by, say, 10,000 headends, and you wind up with a $225 million price tag! A quarter of a billion dollars for a technology that will be technologically obsolete by the time it's fully in place...

The Latest Scrambling Adventures

Since our last article, the major cable companies have brought a lot of pressure to bear on the satellite-based programmers to all scramble as a group. Several ill-fated scrambling consortiums have been announced and just as quickly folded. Public proclamations by cable company executives threatening to cut off any programmer who doesn't go along with the agenda read like statements from the worst robber barons of the last century.

The cable company actions have also attracted the attention of the Justice Department which has recently directed all programmers not to destroy any correspondence from cable companies on this subject. It looks like a full-blown anti-trust lawsuit may be looming just over the horizon. After all, cable companies do control over 90 percent of the satellite networks' access into the American home. That's a pretty good monopoly in anybody's definition!

Congress is also getting annoyed with the unfair pressure the cable companies are bringing to bear against the programmers. Fully 10 percent of the House of Representatives have co-sponsored a scrambling moratorium bill, allowing some sanity to return to the marketplace. The bill has a good chance of passing later this year; hearings are scheduled to begin early this year.

Finally, several home satellite television-oriented networks have

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been announced within the past several months. These include Viewers First, a new premium movie service priced at half HBO's rate, and two advertising-supported networks. By 1989, the number of satellite-fed networks is likely to double. And most will not be scrambled.

Scrambling: Network-by-Network

Let's take a look at the scrambling issue on a network-by-network basis, separating the various satellite television channels into nine major groupings. By looking at each type of programming, we can then rank the probability that that group will scramble.

The nine major groups are:

1) Pay-Movie Services (HBO, Showtime/TMC, etc.)
2) TV Superstations (WTBS, WOR, etc.)
3) Commercially-Supported (ESPN, CNN, American Extasy, etc.)
4) Non-Profits (C-SPAN, BizNet, PBS, etc.)
5) Religious Programmers (Trinity Broadcasting, etc.)
6) "Tier II" Cable TV Nets (Disney Channel, Playboy, etc.)
7) TV Networks (NBC, ABC, CBS)
8) Ad-hoc Programming to TV Stations (Wold, INN, etc.)
9) Video Teleconferences

Pay Movie Services

Pay movies services account for about 7 percent of all satellite-fed television network programming. It is likely that by 1988 all movie channels will be scrambled, as they derive their sole revenue from viewer payments and, more importantly, their contracts with the Hollywood studios requires that they exercise control over the theatrical "gate."

As prices come down, look for scrambled services like Select-TV to charge between $5 to $10 per household per month on a direct satellite viewing basis. Third generation scramblers delivering these programs should retail for under $100 by the time the last pay movie service cuts over to scrambling. When the Japanese enter the descrambling market, this figure will drop to under $50.

Scrambling Score for Pay Movie Services: Very Likely.

TV Superstations

The TV Superstations are a strange hybrid left over from the old days of highly-regulated common carriers. As of today, Ted Turner's WTBS, for example, is delivered to cable company headends not by Turner himself, but rather by an unrelated company called Syndicated Satellite Systems, based in Oklahoma.

Licensed as a common carrier, SSS picks up Turner's WTBS TV signal off the air in Atlanta, uplinks it to the SSS-owned transponder, and sells this "distant city headend signal delivery service" to cable companies nationwide at 15 cents per cable subscriber per month.

Turner makes his money by having millions of viewers watch his once sleepy little TV station. He can now charge national network TV prices for his advertisements instead of the smaller rates he used to bill out.

"Congress is also getting annoyed with the unfair pressure the cable companies are bringing to bear against the programmers. Fully 10 percent of the House members have co-sponsored a scrambling moratorium bill."

Turner has a stake in seeing as many people watch his TV station as possible. The more who watch, the higher his ad rates can be. In a free marketplace where the cable companies can't use their collective muscle to threaten Captain Ted, do you think that he'd go along with scrambling his signal—and cutting down his own revenues?

O.K., so Ted won't scramble if not pressured into it. But what about SSS? Two problems here. First, it may not be legal for SSS to scramble its signal. After all, its relaying a *broadcasting* station, designed to be broadcast. The FCC might have something to say about that. Second, what would prevent another organization from coming along and transmitting Ted's signal unscrambled? Nothing. Finally, the distinctions of common carrier and programmer are becoming so fuzzy today, it's likely that Ted himself may be allowed in the future to feed his own signal directly to the satellite.

Scrambling Score for Superstations: Not likely.

Commercially-Supported Networks

Unlike WTBS-TV, which is an FCC-licensed broadcasting station, Ted Turner's Cable News Network isn't. And Turner controls his own destiny with CNN. He owns and operates the CNN uplink and transponders. He calls the shots. And CNN is advertiser supported. True, Turner also charges the cable TV companies a dime or so per subscriber per month to carry his CNN signal on their cables, but his real revenues come from ad sales. And higher viewer numbers mean bigger ad dollars.

The same is true for the other commercially-supported networks. Most charge the cable companies some nominal per-subscriber monthly amount—basically to help defray the satellite delivery charges. But they really live or die on ad revenues. And a million or two more home satellite TV viewers can make a big difference in whether they survive or go under.

Scrambling Score for Commercially-Supported Nets: Not Likely

Nonprofit Networks

Nonprofit networks have a mission to benefit the public, not a particular advertiser or group of owners. Thus, with few exceptions, nonprofit channels like C-SPAN will never scramble.

There are political considerations with PBS, however. PBS derives some of its revenue from government grants, some from private grants, and some from local PBS station programming budgets. If significant numbers of TV viewers tune out the local PBS station in favor of PBS satellite program feeds, the local stations fund-raising may be endangered. This, in turn, could affect the overall health of PBS itself. So maybe PBS should scramble its signals... or so the theory goes. The reality is that PBS *and* the local PBS station owe their allegiance to the viewing public—and that includes home satellite TV viewers in non-PBS served areas as well.

Laying on an expensive satellite scrambling system to the already thinly-stretched PBS budget is not likely to materialize. More importantly, would Congress allow it? Scrambling the PBS channels would definitely deprive hundreds of thousands of home satellite TV viewers their only ability to pick up tax dollar-paid PBS programming. Would that be legal? Or moral?

Scrambling Score for Nonprofit Networks: Not Likely.

Religious Programmers

The religious networks such as National Christian Net, Eternal Word

(Continued on page 79)

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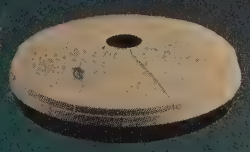

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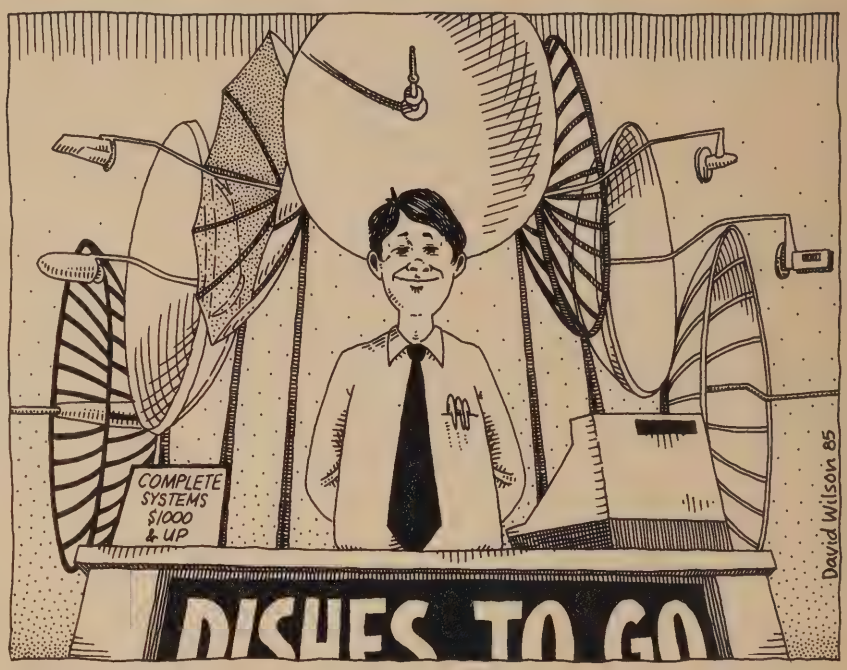
CHAIN-STORE REACTION

MULTI-CITY GIANTS STOCK SATELLITE TV-GEAR

Giant nationwide stores are gearing up satellite showrooms. There's probably one right around the corner from your home.



By Mark Trost

In home satellite buying, as in life, dealing with the devil you know is often preferred to haggling with the devil you don't.

Fortunately for consumers, the home satellite explosion has led a number of the nation's largest and most highly thought of department stores, electronics chains, and even door-to-door sales operations to add earth stations to their already considerable inventory. These outlets known for their desire to give the consumer a good shake rather than bad turn are changing the ways people are looking at and buying satellite TV.

Radio Shack, Curtis Mathes, and Amway (that's right, the same people who come to your door selling soap power) are three of the most formidable national names that have recently begun carrying dishes and related electronics. However, they are only part of the new retailing breed. Such regional giants as New York's Crazy Eddie, the Great Lakes' Highland Appliance, and the Southwest's Otasco Stores are now all playing the satellite ballgame.

Although all are selling different equipment, at different prices and in different ways, there are some significant similarities among the "name brand" stores that provide an interesting counterpoint to your friendly neighborhood satellite salesperson. All such "major retailers" are selling high quality name-brand equipment, whether it's under their own name or that of its manufacturers—more often than not such suppliers as Wilson, Winegard, Panasonic, Amplica, and Janeil. If the unit isn't designed to be installed by the user, most stores will have the equipment installed by their own installation specialists or a trained "outside contractor." While you might feel that delegating the installation responsibility to a third party could result in faulty installation, be assured this is a time-tested means of offering quality set-up. Keep in mind the garage door you bought last year at Sears was not installed by a Sears employee, but a local contractor, and didn't he do a good job?

As comforting as all this sounds, going to a well-known retail outlet is no guarantee of a markedly improved home satellite buying time. No matter the name behind the product or the store's desire to add you to their legions of satisfied customers, there's no assurance that the system you buy from Otasco will differ significantly from the one you would get at Pete's Satellite Store. In fact, better "satellite specialists" like Pete often offer a level of individualized service—including a willingness to answer the simplest questions or install the most rudimentary dish—simply unavailable from a larger concern. But if you find you know more than your local version of Pete; are unable to locate Pete's satisfied customers; or just can't find Pete, a quick trip to the mall to see what the big guys have in the way of the big antennas might well be in order.

"All such major retailers are selling high-quality brand name equipment, whether it's under their own name or that of its manufacturers."

Certainly, the biggest retailer making the biggest commitment to the satellite field is Radio Shack. All you have to do is look at the company's 1986 catalog with the steel mesh Raydx dish on the cover to see that they mean satellite business. According to the company, all 6,500 of its stores are now selling the Tandy-branded "Complete Home Satellite TV System" for $1,995. The system, features an 8-1/2-foot Raydx mesh dish, full-featured Regency-made programmable remote control receiver, 80° LNB, and a high-efficiency feedhorn. And like most Radio Shack products, it's a high-quality system designed for the do-it-yourselfer.

"We've been playing around with these things for a couple of years, and we designed this one from the ground up for the average consumer," says Bob Miller, merchandising vice president for Radio Shack's parent company, Tandy. "We didn't let the engineers touch it until we'd played with it and eliminated everything that was wrong. We believe a first time Freddie Fumblefingers can probably get the dish assembled in four hours, although we've had people assemble

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them in half an hour," says Miller.

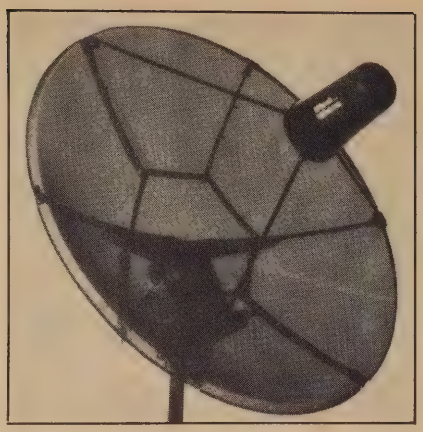
Other common installation problems have also been overcome according to Miller. "We came up with a unique mounting method that allows the pole to be easily levelled even after the concrete has hardened, taking away one of the major problems with do-it-yourself installations. In fact," Miller adds, "people tell us that a whole system can be done by a skilled person in about three hours, and about a day for the average guy."

For those who feel they need a tad more hand holding, the company includes a how-to video tape featuring step-by-step installation instructions, although the problem of hooking up the VCR in the backyard is not addressed.

Radio Shack isn't alone in their faith in the Freddie Fumblefingers of the world. Amway, the billion-dollar-per-year retail network peopled almost exclusively by independent entreprenerial contractors is selling a complete you-install-it system for just under $1,000.

The Amway set-up includes a stationary six-foot perforated aluminum dish, Automation Techniques-made blockdown receiver, LNB, feed and 100 feet of cable. An optional handcrank polar mount is also offered. Just like Amway laundry detergent and hand lotion, home satellite buyers enticed by the alluring satellite system pictured on the back cover of the firm's latest catalogue (there is no in-home demonstration) place their orders with the neighborhood Amway distributor. He/She in turn relays the order to their supplier who ship the product directly to the buyer. An Amway spokesperson claims that once the box is delivered "all the consumer has to do is take it out and bolt it together."

The story—and product—is much



the same at the 550-store strong Otasco chain. Known throughout Oklahoma, Arkansas, Texas, Alabama, Georgia, South Carolina, Kansas, and eight other states as the place to go for refrigerators and washer/dryers, Otasco has just added the seven-foot "Big Wil," five-foot "Lil Wil" and the "Lil Will RV-5" satellite systems from Wilson.

Again, designed for installation by the user, the units are priced from $1,000 and include all necessary electronics and wiring. Those looking for a demonstration of the unit in the stores may have to settle for a video tape showing, since many Otasco outlets do not have the facilities to showcase the system live.

It would appear that anyone capable of putting together a state-of-the art satellite system, be it the particularly intricate Radio Shack version or the more simple Amway offering, could buy their set-up just about anywhere and be assured it would work, since it's really up to them to get it up and running. This leaves the true novice little better off than he was at the beginning of his search. After all, who needs to buy from some big-name, high-overhead dealer to make sure you're getting good equipment when one wrong turn of the shovel could reduce the entire system to a pile of metal.

For the real Freddie Fumblefingers among us, there are other familiar alternatives. Perhaps the most accessible is one of the 6,500 Curtis Mathes stores carrying a rather pricey private labelled assembledge from Amplica. The CM system includes a 9-1/2 foot dish and full featured receiver selling in the $3,500 to $4,000 range. While that may sound high compared to others offering systems below the four-figure mark, CM is offering something the Fumblefingers among us would pay anything to get—complete service.

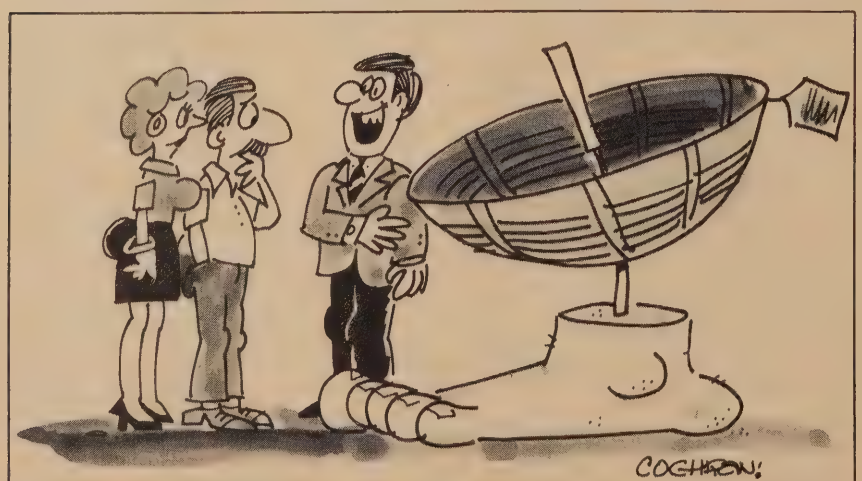
According to the firm's director of product planning, Foy Wilkie, each store can demonstrate the system its selling live and in-person and on a huge Curtis Mathes projection TV. Further, the salesman you talk to will actually know what you are talking about, as each is trained specifically for the task of answering home satellite-related questions. When it comes to installation, Curtis Mathes is among the few chains that trains its own staff of installers who work out of individual franchise locations.

If the C.M. approach is right for you, but the prices are wrong, there are still other "devil you know" alternatives, depending on which part of the country you live. Would-be satellite owners in the Midwest are advised to visit one of the nearby Highland Appliance outlets which is now offering a full line of Janeil gear. Highland, considered among the nation's top 20 consumer electronics retailers, offers customers a live demonstration of the Janeil system. If you decide to buy one, there's no need to go to the hardward store next door for a wrench. All Highland asks of you is to call an 800-number which switches you to Janeil headquarters. The manufacturer then sends out an installer from a nearby service and installation center that the firm has established. The installer does the site survey and installs the system.

Janeil has set up a similar system for the Stokes Brothers, a 15-store operation found throughout Utah and Texas (keep in mind when shopping here that the suggested retail price does NOT include Janeil installation). In Washington and Florida, Costco is another retail operation offering Janeil gear and installation.

Relatives of Mr. Fumblefingers throughout the Ohio Valley and Great Lakes areas should look into the new satellite systems being displayed by Higbee's, Shillito Rikes, Home Center, Custom Sound, and

(Continued on page 80)



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KU AND C-BAND COMPATIBLE RECEIVERS

Buyer's Guide

The only way to watch the Super Bowl on NBC is with one of these new receivers!

By Ron Daniels

A year ago if you asked a satellite industry guru what they thought the possibilities for C and Ku-band compatible satellite receivers were he probably would have said little to none. Today that same guru may well have to eat those words as more C and Ku-band compatible, and we emphasize "compatible," receivers have shown up on the market.

For the uninitiated, Ku-band and C-band compatible receivers would be similar to current television sets which are VHF and UHF compatible receivers. Ku-band was originally envisioned as the prime home "direct broadcast service" (DBS) delivery system for home satellite TV, and the powers that be didn't forecast its arrival for another decade. Ku-band is a different frequency from the C-band which is the common delivery method for satellite TV programming although that is expected to change.

For once the American people got the jump on those that would profit greatly by putting up an all-pay TV service DBS system on future Ku-birds. The impact of the market-driven industry that C-band home satellite has become has been profound to say the least.

Some industry experts recognize the fact that Ku-band video transmissions will increase, and that eventually all video programming will be on Ku-band satellites and the C-band birds will be reserved for telephone and data. Before you current owners of C-band systems get too upset your current equipment will not be obsolete just yet and it will be several years down the road before Ku-band becomes the delivery method of video programmers. By that time you may want to upgrade your system anyway and judging by the current breed of satellite receivers, C and Ku-band compatible will become the industry standard just as VHF and UHF exist in harmony by FCC edict on current production TV sets.

While many manufacturers produce or claim to produce a C/Ku band receiver you should be forewarned that does not mean you just plug them in and can receive both bands. The hardware to receive Ku-band signals is barely off the drawing boards for the home satellite systems and is not yet in widespread production.

For example, a current manufacturer that advertises Ku and C band compatible receivers cannot supply the necessary downconverter to process the Ku-band signal. A separate downconverter or Low Noise Block Downconverter is needed to receive both C and Ku-band transmissions on the same receiver. There are some manufacturers that are producing the necessary converter and feed but usually you can only receive one polarity from the Ku birds which limits your choices.

Chaparral Communications, of Polarotor™ fame, is currently working on a dual feed system which, if everything went according to schedule, should be available this month—just in time for the Super Bowl which is being transmitted by NBC. The National Broadcasting Company was the first major network to jump to the Ku-birds and they currently feed most of their programming, news, and sports over Ku satellite SBS 3.

There are about 23 full and part-time programmers currently using Ku band birds for feeds including our neighbors to the north (Canadians) who use Anik C3 to transmit a movie, sports and news programming plus educational programming on a 24-hour basis.

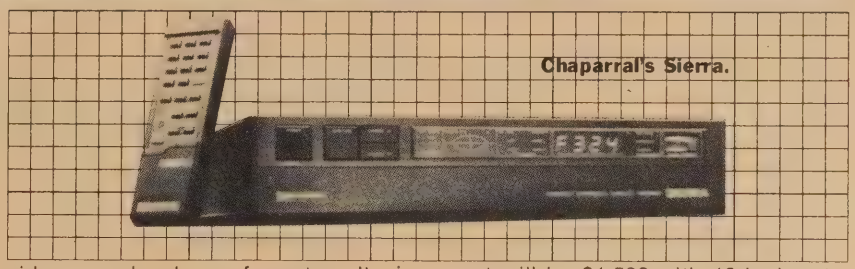
Football fan or not, consumers should consider the new trend to Ku when buying a satellite receiver. Although there isn't much video to catch on Ku today, the future looks bright indeed. And if you're spending for a top-of-the-line piece of equipment you may as well have the option for Ku. As many mothers have said about soup—it can't hurt.

A word to the shopper. Prices listed in this buyer's guide can vary from region to region and from dealer to dealer. Manufacturers also have the right to change them at any time. It's the wise buyer who gets more than one quote for the items he wishes to purchase. Prices listed here were given by the manufacturers shortly before printing and therefore may be subject to change.

CHAPARRAL COMMUNICATIONS

Chaparral Communications was one of the first to combine the receiver the antenna position functions in one attractive product and also is one of the few satellite receivers with on-screen display of all commands on your TV set, just like the most sophisticated VCRs.

The Sierra is C and Ku band compatible, with total system control from front panel or remote control including TV power, volume, and mute, satellite channel choice as well as audio and video fine tuning. The actuator is also controlled by the remote. There is automatic fine tuning of video and skew, with preprogrammed audio, video, and skew formats. It is descrambler compatible and there is a choice of three actuator arm lengths—18, 24, and 52 inches.



Chaparral's Sierra.

The Sierra is considered one of the best receivers on the market and retails for around $985 as a standalone unit; cost will be $1,500 with 18-inch actuator and other electronics.

Chapparal has announced a lower-priced brother for this unit called the Cheyenne. Check with your dealer for more details, since the firm had no details at press time.

ELECTROHOME E-1

Electrohome has been involved with the commercial microwave market for many years, servicing the Cable Television Industry from its Ontario, Canada, headquarters.

The E-1 is a full featured remote controlled system that has just about every "bell and whistle" available on a home satellite receiver today.

The block converson E-1 is a microprocessor controlled receiver with built in programmable dish positioner that is interfaced with the satellite channel select function. This feature provides total automatic polarity, skew, fine tuning, audio and bandwidth plus video channels for up to 32 satellites.

Electrohome's E-1.

Ku/C band compatibility goes without saying.

All functions of the receiver are controllable from the infrared hand-held remote.

The simple slim line design of the receiver should blend in with most entertainment centers.

Suggested retail for the E-1 is $1,195.

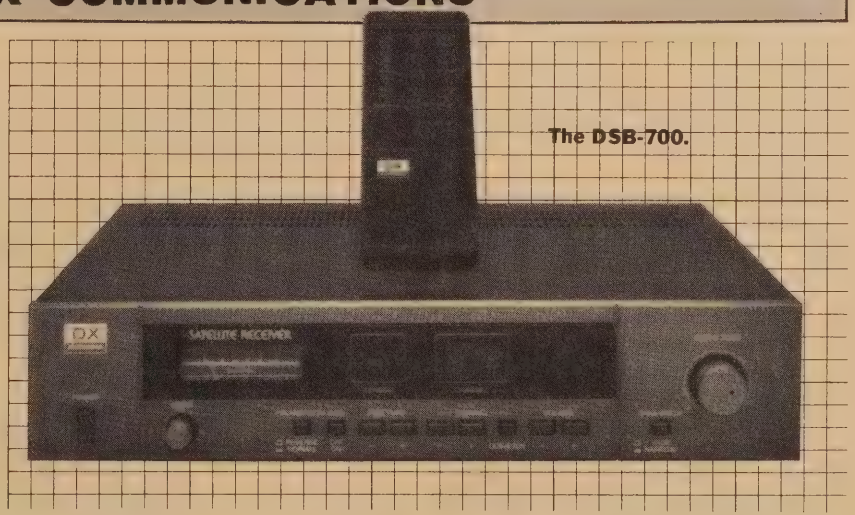
DX COMMUNICATIONS

DX Communications was one of the first out of the blocks with C and Ku-band compatible receivers and they also have the necessary feed and LNB. In fact DX has a whole stable of Ku/C-band receivers including the DSB-600 and DSB-700 receivers.

Both receivers are block conversion receivers which allows for multiple hookups and are low and middle priced receivers with many features found on higher-priced units.

The DX 600 features detent channel selection with digital readout, video clamp/unclamp switch for descramblers, and video only excelled by commercial units. DX also offers compatible actuator controllers and all other accessories for a complete system.

The DX 700 series also includes the DSB 700 S and DSB 700A. The DSB 700S is a remote-controlled receiver with full audio tuning and stereo outputs. The receiver has dual channel audio tuning for stereo matrix and discrete modes.



The DSB-700.

The DSB 700A is also a remote-controlled receiver without stereo audio capabilities and offers the same basic features as the stereo unit.

The Ku-band LNB is a complete feed and amplifier system (LNB) and retails for around $385.

The DX receivers themselves retail for between $363 (DSB-600A) and $575 for the top-of-the-line DSB-700S model.

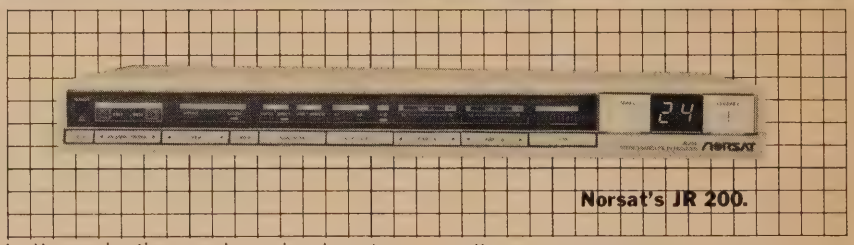
A complete Ku/C-band compatible system would retail for about $1,500 depending on antenna choice.

JR-200

The JR-200 receiver by Norsat is a remote controlled receiver that also offers stereo (discrete or matrix) sound, as well as both bands.

Another feature of the Norsat JR-200 is the availability of an optional antenna controller built into the receiver and it's all operational from the handheld remote control.

The receiver also features preset and tunable audio, a 10 LED relative signal strength bar, scan for satellite search when using the manual mode, push-button selection, and overload protection.



Norsat's JR 200.

The remote control provides for direct channel access, audio mute, audio preset, stereo selection (matrix or discrete) skew control and format button.

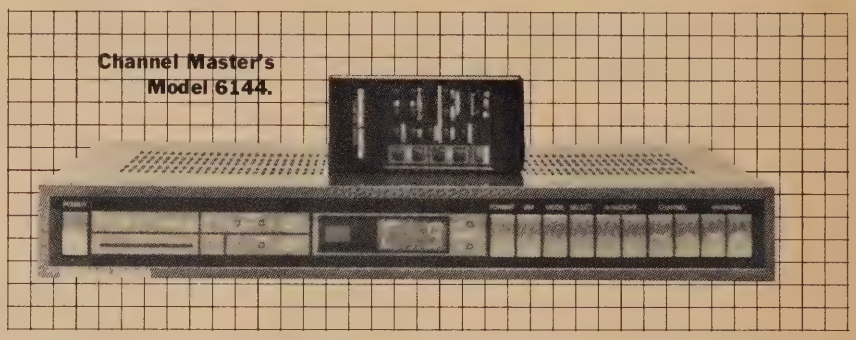
The JR-200 retails for about $575.

CHANNEL MASTER

Channel Master's Model 6144 microprocessor-controlled satellite receiver offers features including stereo audio, integrated antenna control, and Ku-band compatibility into one unit.

Integrated antenna control, automatic polarity switching, and a built-in A/B switch makes selection of satellite and channel simple. A unique signal-seeking feature further aids in antenna positioning.

The Model 6144 is capable of receiving transmissions from C-band and newer Ku-band satellites. This, coupled with the switchable clamped/unclamped video output for compatibility with future encryption systems, increases the receiver's adaptability.


Channel Master's Model 6144.

A built-in stereo processor and synthesized audio tuning, with memory for previously-tuned subcarriers, is also included.

An infrared remote controls many of the receiver's functions, including parental restriction, which allows blocking of specific channels for control of family viewing. The receiver retails for $629.

ROYAL SAT BR 300

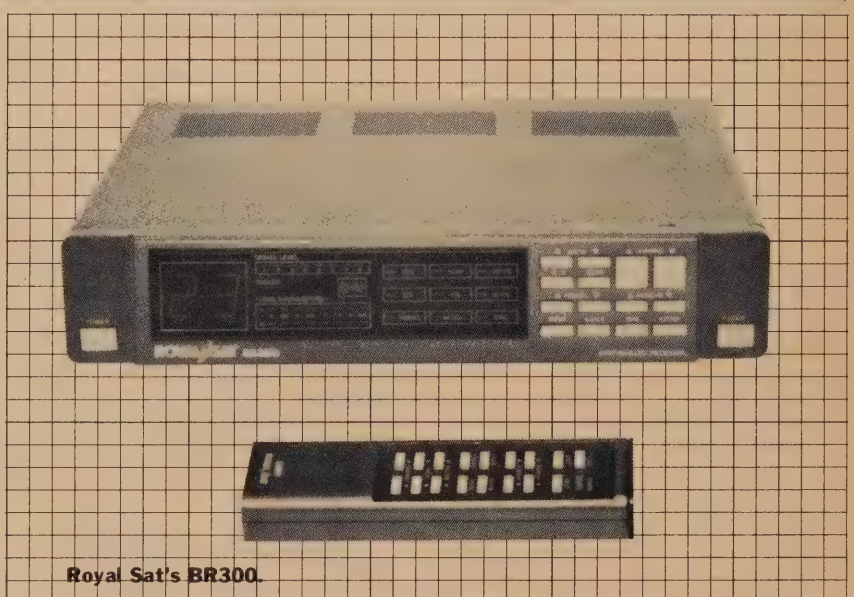
Combining both a receiver and antenna controller into one sleek package, the Royal Sat BR300 offers remote controlled convenience along with all the popular features usually found in high-end receiver/controller combinations.

The BR300 is a block downconversion C/Ku-compatible receiver featuring full stereo (matrix/discrete) and full function remote control.

The receiver features synthesized video to lock onto the correct channel, and a DRO downconverter for drift free performance.

Other features of the BR300 include selectable wide/narrow audio bandwidth, selectable audio 6.2 or 6.8 MHz plus tunable audio 5.0 to 8.5 MHz, LED audio bar tuning indicator (LED), automatic polarity selection, manual and remote skew control, Polarotor and ferrite type rotator control interface, scan function, and automatic satellite/local selection.

The receiver includes a built in AGC, and channel 3/4 modulator plus offers baseband output for decoder interface.


Royal Sat's BR300.

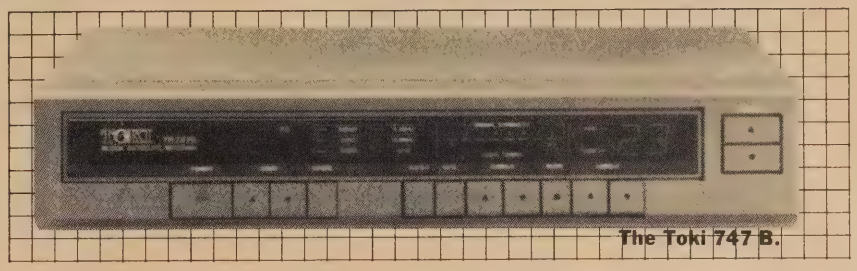
The handheld remote controls on/off power switch, format lock, up/down channel selection, up/down audio, polarity, volume control, mute, "A" or "B" audio selection, and antenna east/west position controls. Suggested retail is about $650.

TOKI TR747B

Topping the Toki line of receivers is their new TR747B C/Ku band compatible remote control receiver.

With synthesized tuning and block conversion the TR 747B is Toki's most sophisticated and ambitious entry into the home receiver market.

The microprocessor control TR747B features full stereo processing (discrete or matrix) along with mono audio tuning (4.8-8.2 MHz) with two preset narrow and wide audio bands 6.2/6.8 MHz. It also offers auto polarization, programmable audio memory, built in Polarotor 1 and ferrite rotor control, built in antenna positioner interface for east/west control, remote A/B auto scan and mute control, and automatic switch for local TV.



The Toki 747 B.

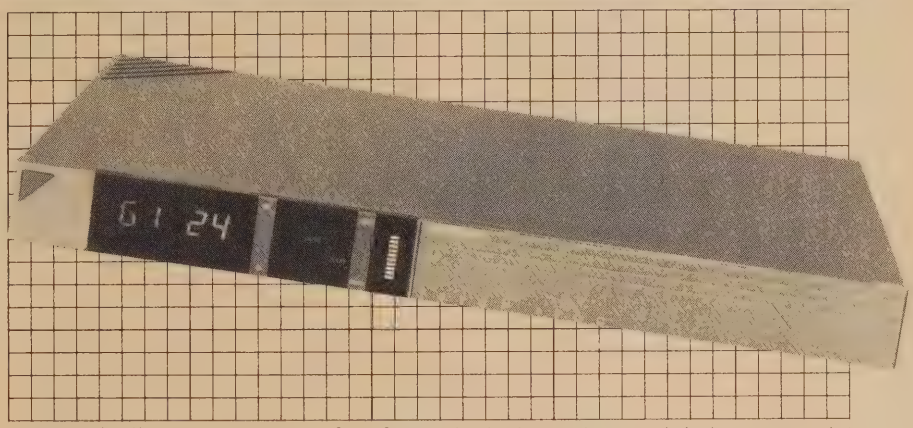
The remote control (handheld infrared) features power on-off switch; channel up-down, skew control; format, mute control, and satellite East/West positioner buttons.

LUXOR 9900

The Luxor 9900 is a fully remote controlled Ku-C band receiver that allows the user to tune up to 840 channels on 35 satellites.

Push button signals from the hand held remote control assist in precisely locating a desired satellite and fine tune dish position for optimum channel reception, which is especially critical for Ku reception. The 9900 Receiver is factory programmed for any audio system on any transponder (channel) on all satellites. New satellites can be added.

The 9900 Block Receiver incorporates a new Luxor exclusive called the Luxor Micro Step™ Tuning System (LMS). When channel select buttons are pushed on the remote unit, the 9900's LMS instantly seeks the right signal within a given channel frequency. Thus, the 9900 receiver automatically compensates for frequency drift due to climate or transponder variances at the satellite 22,300 miles distant.



Using the handheld remote, an internal TI filter can be assigned to individual channels to minimize terrestrial interference. A discrete parental lockout can keep unauthorized users from tuning in one or more channels on a signal satellite. Suggested retail price is about $1,900.

LUXOR 9995

The Luxor 9995 was designed as an add on receiver for the Luxor 9900 and Luxor's Mark 2 in multiple TV installations. While designed as an add-on the 9995 is a stand alone block receiver compatible for C and Ku band.

The 9995 features manual audio tuning from 5.0 to 8.0 MHz, and preprogrammed audio frequencies of 6.2 and 6.8 MHz. The receiver also features narrow and wide audio selection.

Other features include a built in A/B switch for local and satellite TV, and a defeatable AFC.

The receiver is a manual channel selection type with numerical readout on the front of the brush aluminum chassis, and also features a signal strength meter.

The receiver also features skew and polarity control (Polarotor 1), baseband audio and video outputs, unclamped and unfiltered raw video output for descrambler hookup, and an external TI filter input. The RF output is compatible for channel three or four.

Luxor's Model 9995.

Suggested retail price: $509 with downconverter.

Earth Station Owner of the Month

COUNTRY & GOSPEL STAR CRISTY LANE

When she's not on the road, she uses her satellite system 14 hours a day!

By Alanna Nash

When country-gospel star Cristy Lane and her husband, Lee Stoller, bought their ETV satellite dish system several years ago, each had a specific purpose in mind.

"Well, I just *love* television," says the bubbly, 46-year-old singer, relaxing after a concert in Louisville, Ky. "I have it on 14 hours a day when I'm home—sometimes just for company, but also because I get a lot of good from it. I like a lot of the news programs—the documentaries, and Cable News Network, and *Good Morning America*. But I watch other things, too—some of the soap operas, and shows about animals, and especially the cooking shows, because I love to eat. I just like to keep up on things. I have friends who don't buy newspapers or watch television, and they don't know from nothin'. I want to know what's going on."

Lee Stoller wants to know what's going on, too—especially with the commercials he writes and produces for his wife's records and other collectibles, including a Cristy Lane doll, a souvenir plate with Lane's picture on it, and the singer's biography. As Lane's manager and the executive producer of her albums, Stoller runs commercials on no less than nine cable networks and channels—WGN, WTBS, CBN, USA, TNN, Lifetime, CMTV, ESPN and Headline News.

The result is that Lane's Christmas album has been moving briskly, and her inspirational album, "One Day at a Time"—which has been advertised on television since 1981—has sold more than 3 million copies, making it, according to Stoller, the biggest-selling gospel LP of all time.

"The latest survey says the average person has the television on 7 hours and 14 minutes a day," Stoller says, sitting by his wife's side and holding her hand.

"Yeah," she chides good-naturedly, pointing toward him. "But who has it on all night long, trying to catch the commercials instead of the programs?"

In an industry where fortunes are made and lost overnight, and where each new success story is more outrageous than the last, the Cristy Lane saga is in a category by itself.

Through ingenuity, hard work, perseverance—and not a small amount of faith and talent—an East Peoria, Ill., housewife and her traveling salesman-husband have beaten at least two sets of incredible odds: First, through setting up their own small, independent record label, they established Lane internationally as a major singing star, and then went on to beat the Nashville record moguls at their own game—by selling her records not in stores, but on television, with mail order fulfillment.

The majority of mail order products sold on cable TV are done so through a "per inquiry," or P.I. arrangement, where the networks claim a percentage (usually 25% to 30%) of the retail price for each order filed, instead of charging the advertiser full price for regular commercial time.

But the Cristy Lane TV campaigns have been so successful that the 48-year-old Stoller (his name rhymes with "bowler") insists he's better off simply buying the time. Each time one of his spots runs on TV, he says, he moves approximately 500 units.

"If you've got something selling real hot, then you're better off not doing a P.I.," explains Stoller, who is low-key, soft-spoken, but determined as a freight train. "Last year, for example, Cristy's 'Greatest Hits' package outsold everything on TNN, 7-1. If I'd been running a P.I. instead of paying $700 for a spot, it would have cost us maybe $2,000. As it turned out, somebody must have found out what Cristy was selling, because they upped our rates on us there."

Just *why* millions of TV watchers open their wallets and hearts to Cristy Lane is something of a mystery, however.

Named the Top New Female

(Continued on page 70)

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Choose Certified's "**Battlestar**"™ steel mesh antenna or the "**Dishcovery**"™ aluminum mesh antenna and you have your ticket to the World . . . of entertainment, sports, movies, news . . . whenever you want.

Both antennas are rugged, easily assembled, precision formed to provide a strong signal, and blend in with their surroundings. The baked enamel finish is extremely durable and both come complete with mount, center feed, and LNA cover.

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Programming Highlights

From A To Z On Satellite TV

(Note: All times listed are Eastern Standard)

CBN

CBN's October plan to premiere its first full-length newscast, "CBN News Tonight," has been scrubbed until January 6th. "Technical problems" are being blamed for the delay. Assuming these problems are ironed out by then, "CBN News Tonight" will be on every night at 10 p.m. [ET]. Like its Big 3 network counterparts, CBN's News will be a half-hour long. Unlike them, it will be headquartered in and broadcast from Washington, D.C. A new wrinkle is the addition of "900 number service" surveys, which will offer viewers a chance to "talk back" with instant opinions on major news stories.

C-SPAN, Satcom 3R, Transp. 19, Galaxy 1, 13

The political drama continues on C-Span. The central plot revolves around television coverage of the Senate. In November, C-Span appeared to gain an edge when the Rules Committee set forth a resolution calling for gavel to gavel coverage. But it seemed to hedge by suggesting that C-Span cameras could turn on the Senate only after a test period during which the need for procedural changes (and better camera angles?) would be studied. To heighten the intrigue, C-Span televised the Rules Committee meeting in which the bill was marked up before presentation for voting. Now with no word on when the resolution will come up for a vote, C-Span is left cliffhanging. Definitely a stay-tuned situation.

COUNTRY MUSIC TELEVISION Telestar 303, Trsp. 4

Giving The Nashville Network a run for its money, Country Music Television is now reaching over five million households with its 24-hour-a-day, stereo videos format. CMT currently has a library of 200 videos featuring the hottest country music stars and is adding 14 to 16 new ones per month, making it "the place" to keep up with the latest in country music fare.

Top shows to watch on your satellite system for January.

By Susan Easton

Art Carney and Frank Simmons (right) star in "The Blue Yonder" on The Disney Channel.

DISNEY CHANNEL, Galaxy 1, Transp. 22

Dr. Joyce Brothers has set up office hours in the form of 16 one-hour specials on The Disney Channel. Her program focuses on improving communications within families. Various family-life professionals and area specialists join Dr. Brothers for group discussions and celebrities (such as Dick Van Patten, Marla Gibbs, Jerry Mathers, Lynn Redgrave, and Frankie Avalon) help drive the messages home by sharing their own techniques for improving the quality of family life. On the lighter side, each program showcases a guest comedian who offers up a humorous monologue or commentary on the little challenges and idiosyncrasies of life in general. Making use of another Disney resource, Dr. Brothers also takes some time to interpret the results of special polls conducted at Epcot Center in Orlando, Fla.

ESPN, Galaxy 1, Transp. 9

"Biznet News," the news program produced by the U.S. Chamber of Commerce, has been selected by ESPN to replace its own cancelled morning business program. The name of the show will be changed to "Nation's Business Today," and ESPN will carry it exclusively after Biznet's current contracts with the USA Network, Learning Channel, and Financial News Network expire in March 1986.

HBO, Galaxy 1, Transp. 23 (East) Satcom 3R, 13 (West)

If you missed any of them in your local theater, make a note to watch Goldie Hawn in *Protocol,* Ryan O'Neal and Shelley Long in *Irreconcilable Differences,* Jack Lemmon in *Mass Appeal,* Mel Gibson and Sissy Spacek in *The River,* and Howard E. Rollins in *A Soldier's Story.* Signed to star in upcoming episodes of HBO's award-winning Ray Bradbury Theater are Peter O'Toole, Drew Barrymore, and

Jeff Goldblum. But the big highlight in January has to be the HBO Premiere Films Presentation of "Murrow," with "Hill Street Blues" star Daniel J. Travanti in the lead role of legendary newsman Edward R. Murrow.

LIFETIME, Satcom 3R, Transp. 17

Lifetime regulars, Dr. Ruth, Regis Philbin, Joan Lunden and Richard Simmons continue to pull in their own special audiences, while other Lifetime offerings have diversified into movies and off-network series like "Nurse." But if you feel like you're coming down with something, the doctors are in all day, every Sunday. Beginning Sunday at noon and winding up at the crack of dawn on Monday, Lifetime has scheduled the Obstetrics and Gynecology Update, the Video Clinic, Cardiology Update, Internal Medicine Update, Rheumatology Update, and the Physician's Journal.

MODERN SATELLITE NETWORK

It's never too early to start planning your next vacation and MSN is ready to help you find just the right spot. Over the winter months, MSN plans to introduce viewers to R&R locations in Hawaii, Guam, Malaysia, Thailand, Taiwan, and the Far East. They'll also explore hideaways and wonders in South America and various cradles of civilization along the Mediterranean coastline. And although cruising vacations recently took a hard knock with the *Achille Lauro* situation, MSN has booked passage on a number of holiday cruises to provide viewers with an armchair look at what comes with various package trips.

MTV, Galaxy 1, Transp. 00

While Sen. Albert Gore is busy pushing through pro-satellite TV reception legislation in Washington, his wife, Tipper, is on the stump to lobby for parental guidance warnings on rock albums. Videos have also come under fire for promoting potentially hazardous messages to America's youth. If you want to see some of the reasons this controversy is heating up, or if you just want to stay on top of what's hot, tune into MTV's weekly Top 20 Video Countdown, Friday night, 11 p.m. to 1 a.m. (ET), or the replay on Saturday from 4 to 6 p.m.

John Wayne and Oliver Hardy had feature roles in* The Fighting Kentuckian, *broadcast on CBN.

NICKELODEON, Satcom 3R, Transp. 1 (East), Satcom 4, 4 (West)

Joining the Nick's stable of old TV classics like "The Donna Reed Show," "Black Beauty," "Route 66" and "Dennis the Menace" is "My Three Sons." (Monday through Friday at 8 p.m. ET). There are a total of 220 episodes of Sons, (a pearl of knowledge for your trivia buffs) and the Nick purchased them all, including the last 36 shows which have not been seen anywhere since they originally aired on network television.

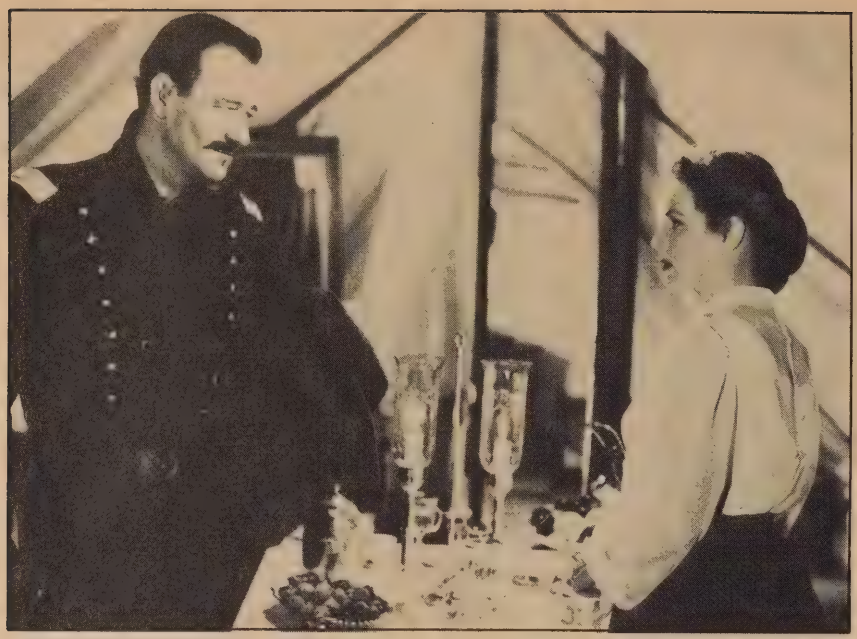
Daniel J. Travanti plays Edward R. Murrow on HBO.

NOSTALGIA CHANNEL, Satcom 4, Transp. 11

More than just a place to show off its collection of 8,500 old movies, Nostalgia (which calls itself "America's complete source of vintage entertainment") is now running films plus classic comedy shorts, movie serials, and early television series 24 hours a day. Other vintage material has been packaged in Nostalgia's growing collection of original programs like Megaphone Video, Nostalgia Radio Theater, StarClips, and Nostalgia News Notes. Not quite "old," but a bonafide blockbuster, Nostalgia's coming attractions include the 1968 epic *War and Peace,* five years and $40 million in the making.

PTL—THE INSPIRATION NETWORK, Galaxy 1, Transp. 17

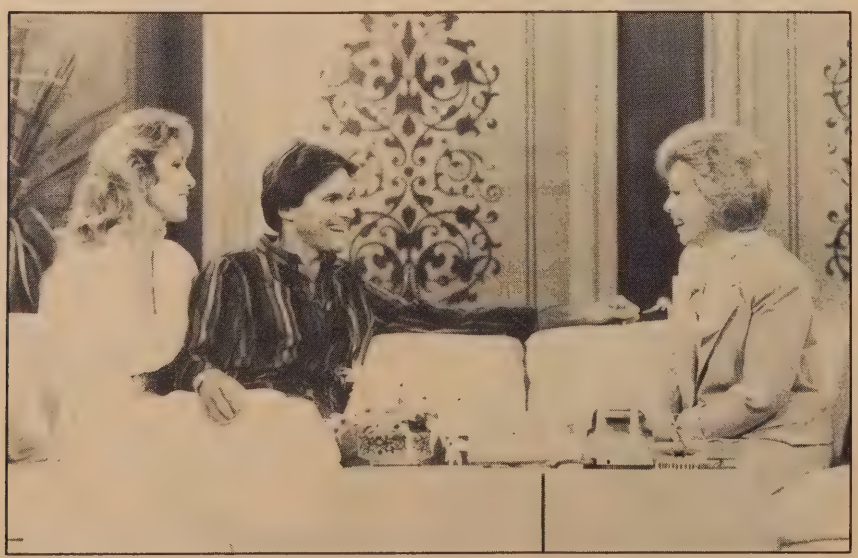
A few years back on CNN, Ted Turner experimented with a program called "Good News," a sort of overflow outlet for the stories too cheerful to fit into the more earthshaking and gruesome headline grabbers. Lack of interest resulted in the cancellation of "Good News," certainly a parable for modern times. Now, every Thursday at 7 p.m. (ET), PTL is taking a similar tack with "God's News Behind The News," a weekly half-hour spiritual interpretation of the recent news and the revelations therein.



***John Wayne and Maureen O'Hara starred in Rio Grande* on CBN.**

SHOWTIME/TMC, Showtime, Galaxy 1, Transp. 5 (East), Satcom 3R, 10 (West). TMC, Galaxy 1, 10 (East), Galaxy 1, 14 (West).

The latest Broadway effort to be taped for the "Broadway on Showtime" series is the Pulitzer Prize winning musical, "Sunday In The Park With George." This show has the distinction of having been inspired by the life of painter Georges Seurat and, more specifically, one of his paintings, "A Sunday Afternoon on the Island of Grand Jatte." Showtime's taping will reunite the original stars, Mandy Patinkin and Bernadette Peters, and most of the original cast as well. Look for this one early in '86. And from our "nice guys file," this story. In September, a convention of R.A.L.P.H. (the Royal Association for the Longevity and Preservation of the Honeymooners), was all set to follow Showtime's recent airing of "The Honeymooners Lost Episodes." When Hurrican Gloria forced the convention to shut down, RALPH's budget was shot, since it ahd already paid to fly in and put up some of the Honeymooner cast members who had agreed to appear at the convention. When showtime heard about this, it arranged to fly everybody back for a new convention date in November. Smiles all around, especially when someone remembered that, in the show, Ralph and Ed (played by Jackie Gleason and Art Carney) belonged to a bowling team named the Hurricanes!



Bruce and Linda Jenner were guests on "The Dr. Joyce Brothers Program" on Disney.

SIN—Spanish International Network

Congratulations to SIN. Its 13-hour telethon raised more than $6 million in relief monies for the victims of the Mexican earthquake. The program was broadcast by satellite throughout the U.S. and 10 foreign countries, proving, once again, that satellite TV technology is a positive, powerful force for solving problems without our global village.

***Kyle MacLachlan was the hero in* Dune, featured on The Movie Channel.**

WGN—Chicago Superstation

Check the January listing between the 6th and the 25th for the exact air date of the two-hour music video interview special called "Rocker '85." Packaged by Tribune Entertainment, this program is, in reality, a trial balloon. If Rocker flies, it may become the music industry's version of the popular "Entertainment Tonight" and will be syndicated nationwide.

WOR—N.Y. Superstation

Transplanted New Yorkers who have looked to WOR for coverage of local hockey teams (the N.Y. Islanders and N.J. Devils), as well as the N.J. Nets basketball team, are going to be left out in the cold. WOR has, in some cases, decided or, in other cases, been forced by other deals to cut these teams from the programming line-up. Even the number of New York Knicks games are being pared down, despite the addition of million-dollar basketball wonder Patrick Ewing to the team.

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Uniden receivers have met their match.

For years, no one was quite good enough.

No one satellite dish antenna quite possessed the exceptional standards of performance that Uniden receivers do.

So we had to create one.

Introducing the Uniden UST-110. An incredibly durable, lightweight satellite dish antenna. The perfect match for the Uniden line of receivers and system components.

The UST-110 features an exclusive Uniden all-extruded-aluminum design with expanded mesh panels, a 5-step baked-on painted weather coating, plus an extra-rigid, heat-treated rib design that maintains high parabolic accuracy.

And to aim the UST-110 there's our advanced line of precision antenna positioners.

Like our economical UST-710 and our fully programmable UST-730.

So contact your local authorized Uniden distributor. Or call toll free 1-800-582-5360. In Canada call 1-800-663-0296. And find out how you can start stocking the entire line of Uniden Satellite Television Systems. Including our exceptional receivers and our UST-110 satellite antenna.

It might not be a match made in heaven. But it's close.

uniden®

Win with Uniden in '85.

PIONEER MEMBER OF SPACE

Satellite TV Guide

A complete list of all satellite networks and where to find them.

AURORA (F5) 143° W

Transponder Number
(TN) Available Programs
20 Learn/Alaska Television Network
Learn while you watch. Every day from 8 a.m. to 11 p.m.
24 Alaska Satellite Television Project
Various network and independent programs. Every day, 7 p.m. to 12 a.m.

SATCOM F1R 139° W

TN Programs
8 NBC—Central
Periodic shows from the Number Two network.
11 Worldwide Television News (WTN)
Daily news from London to Australia.
12 NETCOM International
Periodic sports, news, and network feeds.
18 NASA Select
Part-time coverage of NASA missions.
20 American Forces Radio and Television Service (AFRTS)
Combination of network and independent programming.
22 NETCOM International
(See previous listing.)
24 Radiotelevisione Italiana
Italian network news feeds.

GALAXY 1 (G1) 134° W

TN Programs
2 The Nashville Network (TNN)
MTV with a country accent. Videos and interviews. Every day from 9 a.m. to 3 a.m. 5.58/5.76 MHz for discrete stereo
3 WGN
One of the first superstations. From Chicago, wide variety of films, sports events.
4 The Disney Channel—East
Fun for the entire family. Every day from 6 a.m. to 1 a.m. 5.8/6.8 MHz for matrix stereo.
5 Showtime—East
Recent films and top sports events.
6 Spanish International Network (SIN)
All-Spanish network with films, sitcoms, specials.
7 Cable News Network (CNN)
Up-to-the-minute news.

Dynasty II, The Colbys, on ABC

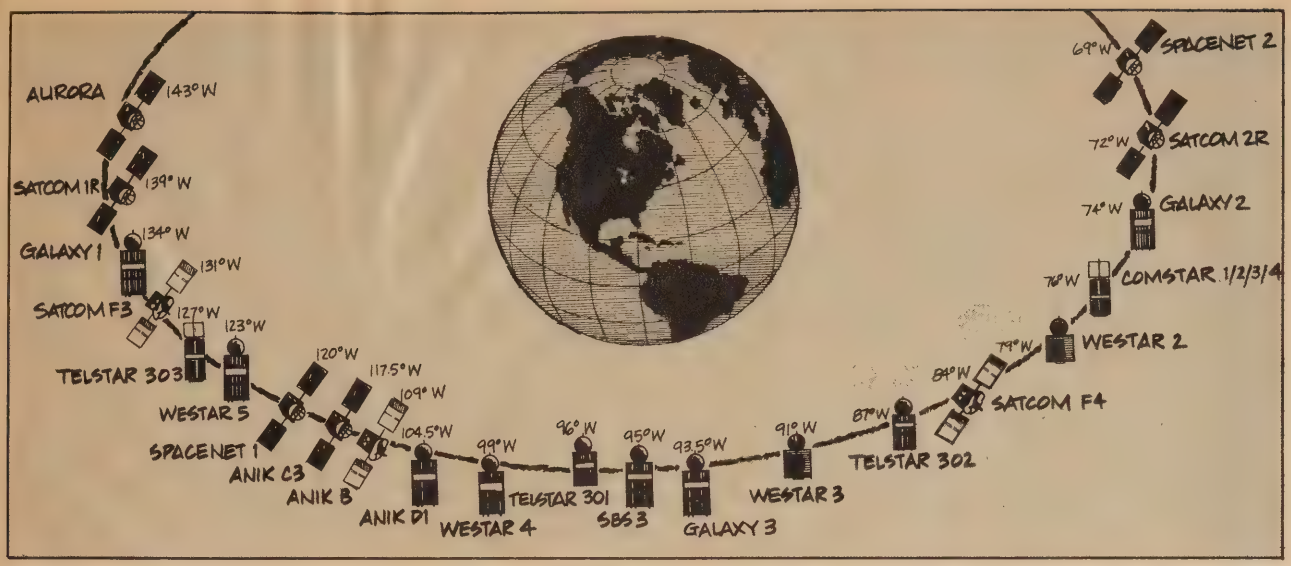
8 CNN Headline News
Complete news in a nutshell.
9 ESPN
Truly the wide world or sports.
10 The Movie Channel—East
First run films without interruptions. 5.8/6.8 MHz for matrix stereo.
11 CBN Cable Network
Religious programming for the entire family.
12 Home Team Sports (HTS)
Evening sports events in Washington, D.C. area.
13 C-Span
The President's favorite channel as House and Senate speeches are aired live.
14 The Movie Channel—West
First-run films without interruptions. 5.8/6.8 MHz for matrix stereo.
15 WOR
Superstation based in New York with wide variety of programs.
17 PTL Satellite—The Inspirational Network
Religious programming for the entire family. Discrete 5.58/5.76
18 WTBS
Atlanta superstation with a wide variety of programs. 5.58/5.76 for discrete stereo.
19 Cinemax—East
Recent films and top sports
20 GalaVision
Programs in Spanish. Weekends from 11 a.m. to 4 a.m. and during the week from 4 p.m. to 4 a.m.
22 Discovery Network
Science and Nature documentaries.
23 Home Box Office (HBO)
The king of cable stations with films and special events.
24 The Disney Channel—West
Fun for the entire family. Every day from 6 a.m. to 1 a.m. 5.8/6.8 MHz for matrix stereo.

SATCOM F3 (F3) 131° W

TN Programs
1 Nickelodeon (East)
Programs for kids. Every day from 7 a.m. to 8 p.m.
1 Arts & Entertainment
High brow shows (theater, concerts) 5.58/5.76 for discrete.
2 PTL Satellite
The popular "Praise The Lord" show. 5.58/5.76 MHz for discrete stereo.
3 Trinity Broadcasting Network (TBN)
Religious programming.
4 Financial News Network (FNN)
Up-to-the-minute business information. Business days from 6 a.m. to 7 p.m.

Linda Evans on Telstar 301

6 Satellite Program Network (SPN)
Mixture of films, videos, self-help. 7.38/7.56 for discrete.
7 ESPN Blackout Network
Periodic shows used to fill in for blacked-out regions.
8 CBN Cable Network
(Same as Galaxy 1)
9 USA Cable Network
Sports, sports, sports. 5.58/5.76 for discrete.
10 Showtime—West
Recent films and top sports events.
11 MTV—Music Television
Rock videos, interviews. 5.58/6.62 Matrix stereo.
13 Home Box Office (HBO)—West
The king of cable stations.
15 VH-1 (Video Hits 1)
Rock videos. 7.4 Digital stereo.
16 Home Theatre Network (HTN)
Shows for the family. Every day from 4 p.m. to 4 a.m. 6.8 Multiplex.
16 The Learning Channel (TLC)
Earn college credit from your home. Every day from 6 a.m. to 4 p.m.



17 Lifetime
Become healthier and happier with these varied segments.
18 Eternal Word Television Network (EWTN)
Roman Catholic programs.
18 Reuters Monitor Service
Wall Street quotes at your fingertips. Businessdays from 4 a.m. to 8 p.m.
18 National Jewish Television (NJT)
Jewish segments and news. Sundays only from 1 p.m. to 4 p.m.
19 C-Span
(see Galaxy 1)
20 Black Entertainment Television (BET)
Black films, specials, and sports. 6.2/6.8 for discrete stereo.
21 The Weather Channel
From the National Weather Service
22 MSN: The Information Channel
Each week features new series on finances, health. Monday to Friday from 10 a.m. to 1 p.m.
22 Home Shopping Club (HSC)
Shop-at-home suggestions.
22 HBO Promo Channel
Enticements from the pay channel.
22 USA Blackout Network
Periodic segments used in cities where sports events are unable to be seen.
23 Cinemax—West
Recent films and top sports.
24 Arts & Entertainment
The best of drama and comedy, music and dance. Every day from 8 a.m. to 4 a.m. 5.58/5.76 for discrete stereo.

TELSTAR 303 (T3) 127° W

TN Programs
1 Country Music Television (CMTV)
Rocky road videos and interviews. 5.58/5.76 MHz for discrete stereo.
2 SelecTV
Movies from PG to R.
18 American Extasy
XXX-films. From 11 p.m. to 4 a.m.
22 KTVT
Dallas superstation catering to Sun Belt Interests.

WESTAR 5 (W5) 123° W

TN Programs
2 The University Network
Unusual religious program from Dr. Gene Scott.
5 JISO (Japanese International Satellite Joint Users Organization).
Japanese Network News.
7 CBS—Contract Channel
Periodic taped/live segments.
14 Pro Am Sports System (PASS)
Periodic sports events from Midwest
22 Taft Broadcasting
Periodic sports, news, network feeds.
22 The Meadows Racing Network.
Trotter action. Every day except Monday and Wednesday. From 7 p.m. to 11 p.m.
24 Fantasy Unrestricted Network (FUN)
For adults only. From 12 a.m. to 6 a.m.

SPACENET 1 (S1) 120° W

TN Programs
2 Bonneville Telecommunications
Periodic sports, news, network feeds.
11 Hospital Satellite Network (HSN)
Inspiring films and medical segments.
15 American Christian Television System (ACTS)
Christian programming.
21 Baptist Telecommunications Network (BTN)
Religious programs. From 9 a.m. to 2 a.m.

ANIK C3 (Ku) 117.5° W

TN Programs
8 Knowledge NET
9 Access Alberta
10 Premier Choix/TVEC (West)
12 Superchannel/First Choice
17 Atlantic Satellite Network
19 Premier Choix/TVEC (East)
24 La Sette
26 TV Ontario
32 Superchannel/First Choice (East)
32 Radio Quebec

ANIK D1 (AD1) 104.5° W

TN Programs
2 The Sports Network (TSN)
For sports addicts.
6 Much Music
Just what it says. 5.41/6.17 for discrete stereo.
8 CHCH
Varied segments from Hamilton, Ont. From 6 a.m. to 2 a.m. (Encrypted)*
9 WDIV
NBC feeds from Detroit station. (Encrypted)
10 WXYZ
ABC feeds from Detroit station. (Encrypted)
11 CBC North—Pacific
Canadian Broadcasting Company programming. From 11 a.m. to 3 p.m. (Encrypted)
14 Telemedia Communications Television (TCTV)
TVA Programming in French. From 11 a.m. to 3 a.m. (Encrypted)
15 CBC French—Eastern
CBC programs in French. From 11 a.m. to 3 a.m.
16 CBC Parliamentary Network
C-Span North with periodic glimpses of Canadian House of Commons action in French.
18 CITV
A mix of independent segments from Edmonton station. From 8 a.m. to 6 a.m., Monday through Saturday, 8 a.m. to 5 a.m. on Sunday. (Encrypted)
19 CBC North—Atlantic
Canada's national network. From 8 a.m. to 12 p.m.
20 CBMT—Montreal
CBC affiliate from Montreal in

English. From 8 a.m. to 2 a.m.
21 WTVS
Detroit PBS outpost with national and local segments. (Encrypted)
22 BCTV
British Columbia CTV station. From 9 a.m. to 5 a.m. (Encrypted)
23 WJBK
Detroit affiliate of CBS. (Encrypted)
24 CBC Parliamentary Network
Periodic transmission from Canadian House of Commons in English.

*Editor's Note: Stations use Oak Orion decoder system. See dealer for details.

WESTAR 4 (W4) 99° W

TN Programs
6 Word of Faith Satellite Network
Periodic religious segments.
10 Word of Faith Satellite Network
Same as above.
11 Catholic Telecommunications Network of America (CTNA)
Catholic segments. From 1 p.m. to 4 p.m. (Encrypted—Oak Orion)
15 PBS
Eastern public television. Monday to Friday from 10 a.m. to 2 a.m., Saturday from 8 a.m. to 12 a.m., and Sunday from 9 a.m. to 2 a.m.
16 Cable News Network (CNN)
Periodic local segments.
17 PBS
Central U.S. Segments. From 8 a.m. to 1 a.m., Monday through Friday, Saturday from 12 p.m. to 4 a.m., and Sunday from 9 a.m. to 11 p.m.
19 Bonneville Telecommunications
Periodic sports, news, network feeds.
19 DEMSAT
The word, according to the Democratic Party.
21 PBS
Mountain U.S. segments. From 7 a.m. to 4 a.m. Monday through Friday, Saturday from 1 p.m. to 4 p.m. and Sunday from 8 a.m. to 2 a.m.
23 PBS
Pacific U.S. segments. From 11 a.m. to 12 p.m. every day except Sunday, 10 p.m. to 11 p.m.

TELSTAR 301 (T1) 96° W

TN Programs
2 CBS-TV (Central)
Scheduled network programming.
3 ABC-TV
Regional news feeds.
4 ABC-TV Contract Channel
Programming and news feeds.
6 ABC-TV
Periodic taped and live network feeds.
7 CBS-TV (Central)
Regularly scheduled network shows.
9 World Communications
Periodic sports, news, and network feeds.
10 ABC-TV (Central)
Regularly scheduled network shows.
12 ABC-TV (Central)
(Same as previously mentioned.)
13 Hughes Televison Network
Sports events from around the country.
13 Major League Baseball Network
Big League Highlights shown daily.
13 Independent Network News
Half-hour news wrapup.
23 Wold Communications
(Same as previous listing.)

SBS 3 (Ku) 95° W

TN Programs
2 Videostar Connections
Independent news and network feeds as well as some teleconferences.
3 NBC-TV (Pacific)
Scheduled network shows.
5 NBC-TV
California to N.Y. feeds
6 NBC-TV (Central)
Scheduled network shows.
7 Conus/Hubcom
Newsfeed access channel.
8 PSN (Private Satellite Network)
(Encrypted—Oak Orion system.)
9 NBC-TV
NBC news feeds and some regularly scheduled programs.
10 U.S. Army School Of The Air

GALAXY 3 93.5° W

TN Programs

Periodic transmissions (sports, news, network feeds) on transponders 2, 4, 6, 7, 8, 9, 10, 11.

WESTAR 3 (W3) 91° W

TN Programs
5 Cable News Network (CNN)
Periodic local programs.
21 Brightstar International
International newsfeeds.

TELSTAR 302 86° W

TN Programs
10 ABC-TV (Pacific)
Scheduled network shows.
11 ABC-TV
Periodic sports and news feeds.
16 CBS-TV
California to N.Y. shows and news feeds.
19 CBS-TV
Periodic sports and news feeds. They are also scrambled part-time as a test.
20 CBS-TV (Central)
Scheduled network shows.
21 NETCOM International
Periodic sports, news, and network feeds.

SATCOM F4 (F4) 83° W

TN Programs
1 HBO
Remote feed channel.
2 Bravo
High-brow entertainment with movies, concerts. From 8 p.m. to 6 a.m., Monday through Friday, from 5 p.m. to 6 a.m. on Saturday and Sunday. 5.8/6.8 MHz for multiplex stereo.
2 The Book Channel
Book reviews and author profiles.
4 Nickelodeon—West
Programs for kids. Every day from 7 a.m. to 8 p.m.
5 ABC
Periodic network programming.
6 Hughes Television Network
Sports events.
6 BizNet, The American Business Network
News and interviews. From 7 a.m. to 2 p.m., Monday through Friday.
7 National Christian Network
Religious fare. Every day from 8 p.m. to 3 p.m.
8 Netcom International
Periodic sports, news, network feeds.
9 SportsVision
Periodic sports events from Chicago.
10 American Movie Classics (AMC)
Just what it says. From 8 p.m. to 6 a.m.
11 Home Sports Entertainment (HSE)
Sports events from Sun Belt. Every day from 6 p.m. to 1 a.m.
12 The Playboy Channel
Hefner's lifestyle comes to life via contests, movies and music. From 8 p.m. to 6 a.m.
13 New England Sports Network (NESN)
Periodic sports events.
14 Home Sports Entertainment (HSE)
Affiliate programs show periodically.
14 Netcom International
(See previous listing.)
15 Healthcare Information Network (HIN)
Medical information programming.
16 The Silent Network
Shows using sign language. Saturdays from 10 a.m. to 12 p.m.
19 WPIX
New York superstation with a variety of shows.
20 Boresight
News about the TVRO industry.
21 The Nostalgia Channel
Bringing back the good old days of entertainment. From 5 a.m. to 2 p.m. and 5 p.m. to 8:45 p.m.
22 ABC Remote Feeds
Periodic transmissions.
23 Odyssey
Yuppie programs with music, exercise. 5.8/5.76 MHz for discrete stereo.

SATCOM F2R (F2) 72° W

TN Programs
13 NASA Contract Channel
Catch all of the space action—live!
20 Armed Forces Radio and Television (AFRTS)
See previous listing.

Backyard Pleasure Machine

Choose from over 120 channels of action sports, instant news, stereo music, inspirational religious, revealing adult, and more. Plus movies, movies, movies and more movies.

By Quentin Breen

First there was television. You could watch five, maybe 10 local stations along with the 3 major networks. and maybe a couple of independents and PBS.

Then came cable TV. You could watch those same stations, ghost-free, plus maybe a dozen or so satellite channels. But for a monthly charge.

Now, a high-tech spin-off of the US space project will forever change the way your family watches TV.

With your own Home Satellite Television System you can pick up over 120 national television channels with razor sharp clarity. First-run movies, top sporting events, global news, adult entertainment, children's programs and religious shows, many in full stereo, 24 hours a day. Even NBC, ABC and PBS are on the "birds".

FREEDOM OF CHOICE

As a football fan, I enjoy selecting my own personal "game of the week" from the 13 carried on satellite every Sunday. No matter what game my local TV station is carrying.

My friend, the news junkie, watches the uncut network news feeds on their way to New York by satellite. He likes to tell me about the news stories that never made it to the nightly news.

If you have specialized viewing tastes, a satellite dish may be the **only** way to exercise your freedom of choice. Most cable systems simply don't carry Yonkers Horse Racing, Canadian TV stations, or the NASA space shuttle channel. And no cable system carries American Extasy or the Fantasy Unrestricted Network.

And because of a new law signed by President Reagan in October of 1984, it's all perfectly legal.

Just a few years ago you could have expected to pay as much as $10,000 for a backyard dish. Even today, most local dealers are selling backyard dishes for over $3,000.

Satellite Express has cut this cost in half. Through our massive buying power, we get truck load prices - and pass the savings directly on to you. You can now buy our very best top-of-the-line, full infrared remote-control, stereo, motorized 10-foot Home Satellite TV System for only $1,599. We call it our Connoisseur Series. And you can install it yourself in a Saturday afternoon, and pocket another $600 in savings!

THE 10′ BOLT TOGETHER DISH

The Connoisseur dish is a full ten feet in diameter, to pull in every one of those incredibly weak satellite signals.

Eight factory pre-meshed panels bolt together with 24 bolts for extraordinary accuracy and quick assembly. Another eight

bolts complete the job. It's the easiest 10′ assembly we've ever seen.

It's also one of the most sensitive dishes, providing a gain of over 40dB at 4 gigahertz. But that's no surprise. It's manufactured for us by DH industries, the largest satellite antenna manufacturer in the world.

The black matte see-through mesh reduces wind load and lets the dish blend with its surroundings. Spray-painted a neutral or green color, it becomes almost invisible.

A PAIR OF WINNERS: THE MAXUM TWINS

Inside, next to the TV set, are the two components you most often see: the satellite receiver and the antenna positioner. They are also the most important. Ours are made by one of the industry's top designers: MAXUM.

The MAXUM RC-011 Stereo Receiver has one of the lowest IF thresholds around, under 7.2 dB (that's good). And it has a built-in stereo decoder for dazzling high-fidelity sound. The built-in A/B switch automatically connects your TV to its regular antenna or cable feed whenever the satellite TV System is turned off.

The receiver is fully quartz-synthesized using a precise Phase Lock Loop circuit, and it is microprocessor-driven with digital channel selection and LED display. It comes with regular TV output (Ch 3 & 4), video feed (for projection TV's or studio monitors), and separate left & right audio jacks for connection to your home stereo system. Of course, it's "descrambler ready."

The matching MAXUM RC-010 Antenna Positioner controls a rugged weather-proof Von Weise motor at the dish, using a microprocessor which remembers the exact position of each satellite. Under your command, the positioner automatically points the dish at any one of up to 75 different satellites.

And its 30-LED antenna position bar indicator and digital-display readout immediately tell you what bird you're watching and its location in the satellite arc.

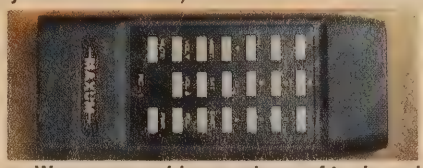
Like the matching receiver, the MAXUM antenna positioner is a striking, clean, low-profile unit which makes a great addition to any stereo or video entertainment center.

IT'S ALL DONE BY REMOTE CONTROL

And now the best of all: All major functions of the MAXUM receiver and MAXUM positioner can be performed by using the hand-held infrared remote controller. You can change channels, move the dish from one satellite to another, adjust the sound, and switch to your regular TV channels - from across the room.

EVERYTHING YOU NEED IS INCLUDED

Each Connoisseur System includes everything needed for a complete installation: feedhorn, 75°/50dB low noise amplifier or LNB, 120′ pre-connectorized cable set, weather cap for out-door electronics, and full manufacturer's one year warranty (5 years on the dish).



We even provide a package of tools and a computerized Satellite Tracking Wall Chart of all the satellites that you can see from your precise location.

And, our copyrighted 10-Step Installation Instructions make hooking up your satellite system a snap.

TRY THE CONNOISSEUR SYSTEM RISK FREE

Wait til you tune in 120 channels of beautiful satellite television. You won't believe it. The stereo sound of the music channels is breathtaking. And the convenience of full IR remote control is a real joy.

If you're not 100% satisfied, simply return the system in its original boxes to Satellite Express within 15 days for a full refund.

To order your Connoisseur Home Satellite Television System risk free with your credit card, call toll free, or send your check for Satellite Express' breakthrough price of just $1,599. (Shipped via truck; freight collect). Order No. 1107. NV res add sales tax.

Bypass the boring humdrum of ordinary TV. There's a world of new television entertainment awaiting you - direct from space! Join the millions of people who are enjoying satellite television today.

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CALL TOLL-FREE....

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KU PROGRAMMING GUIDE

A complete guide to Ku band video. Should you rush out and retrofit your dish? Read on...

By Michael Hoff

There are quite a few receivers out there capable of receiving Ku-band transmissions. There are also two companies making Ku feedhorns and a number of others making perforated and aluminum dishes that can pick up 12 gHz programming. But for those home satellite enthusiasts who have already taken the plunge and retrofitted their dish for 12 gHz reception, the outlook, for the time being anyway, remains somewhat slim.

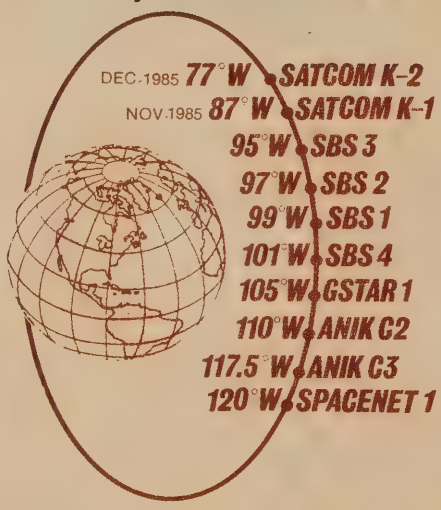
There are few, if any, 450-950 MHz LNBs on the market now, but much more importantly, there isn't much programming up there either.

The fact is that the Ku-band's recent emergence into the home satellite limelight has come more as a result of manufacturers' farsightedness than it has as a result of a sudden plethora of Ku programming. Companies like Chaparral and M/A-Com, who make the new breed of Ku-compatible receivers and dishes, are looking into a future when the urban areas will be as infested with ku dishes as the rural and semi-urban regions are with C-band dishes now. By that time, they assume, there will be a lot of Ku programming to support their prophesies. Until then though, retrofitting your dish for Ku reception does not necessarily mean that you will have access to a vast variety of Ku entertainment.

In fact, with the exception of those consumers living in the far north of the country (where Canadian Anik satellite footprints fall), there is little to excite the Ku enthusiast except news of RA Americom's K1 bird which will be hoisted aloft near the end of December with the specific task of providing quality home entertainment programming.

An RCA Americom spokesman was reticent, however, about what might be carried on K1, and contented himself instead with a simple statement: "We have not made any specific announcements on K1 yet, but obviously we're negotiating with the (cable) programmers."

Of more immediate interest was the scheduled launch in late November of RCA Americom's K2, which has already been slated as RCA's broadcast television signal carrying satellite. K2 will carry all of NBC's broadcast programming. It will also carry the Hubbard network, which has agreed to lease at least four transponders from RCA in order to distribute its CONUS news network.



Also on board will be the United States Football League. USFL officials say the agreement, announced in November, is an important step in their plans to put together a national syndicate of broadcast stations to carry the league for the 1986 fall season.

If RCA gets its way, however, it won't be just football up there at 87° west. RCA is aggressively pursuing transponder sales and leasing arrangements, and is offering transponders in hourly segments for program syndication. The company is also offering complimentary Ku antennas to those television stations that will be relaying NBC transmissions.

With the exception of K1 and 2, however, the programming prospects for Ku-system owners remain somewhat sparse for the near future. The two, Anik C-2 and C-3 birds do carry Canadian entertainment programming like the Movietimes and Showcase movie channels, as well as the Music TV video music channel. A number of educational news and French-speaking channels like *Premiere Choix* are also included, but whatever the choice, you're unlikely to see any of it unless you live in the northernmost parts of the United States.

Of the remaining Ku satellites that cover the States, most are given over to teleconferencing channels, with the exception of SBS 3, (95° west). Holiday Inn leases some of this satellite's transponders to cable programmers like ESPN, WTBS and Showtime/The Movie Channel.

(Continued on page 65)

Ku-BAND VIDEO CHANNELS (As of December 1, 1985)

Receiver Channel Number	Programs (audio frequency in parentheses)
SBS 3	
1	Occasional Video
4	Videostar Connections (6.8)
6	*NBC—West Feed (6.2)
9	Occasional Video
11	NBC (6.2)
13	NBC—Central Feed (6.2/6.8)
16	Conus/Hubcom (6.2/6.8) Campus Network (6.8)
18	PSN (Private Satellite Network)
21	NBC (6.2/6.8)
GSTAR 1	
20	Occasional Video (6.2/6.8)
24	Bonneville Telecommunications
ANIK C-2	
5, 11, 17, 20, 23	Occasional Video
ANIK-C3 East Beam	
1	Atlantic Satellite Network (5.41)
5	Premier Choix/TVEC (French) (5.41)
12	La Sette (French) (5.41)
15	TV Ontario (5.41)
23	First Choice (5.41)
24	Radio Quebec (5.41)
ANIK-C3 West Beam	
11	Knowledge Network (5.41)
13	Access Alberta (5.41)
14	Premier Choix (French) (5.41)
17	First Choice (5.41)
SPACENET 2	
16	Florida News Network
SBS 2	
14	NBC Sports (Occasional Video)

*If all goes well expect NBC transmissions to move to K2 at 87° west sometime in December.

The Only TI Filter You'll Ever Need.

Fantastic New Pricing!

All 70 MHz PFG-30, -40, & -50 filters are now the same price, and it's 10% less than the PFG-30 sold for. Now we offer price, selection, free technical assistance, and the best TI filter available. That's why we are the only TI filter you'll ever need.

NEW PRODUCTS

The latest gadgets to make your satellite viewing more enjoyable.

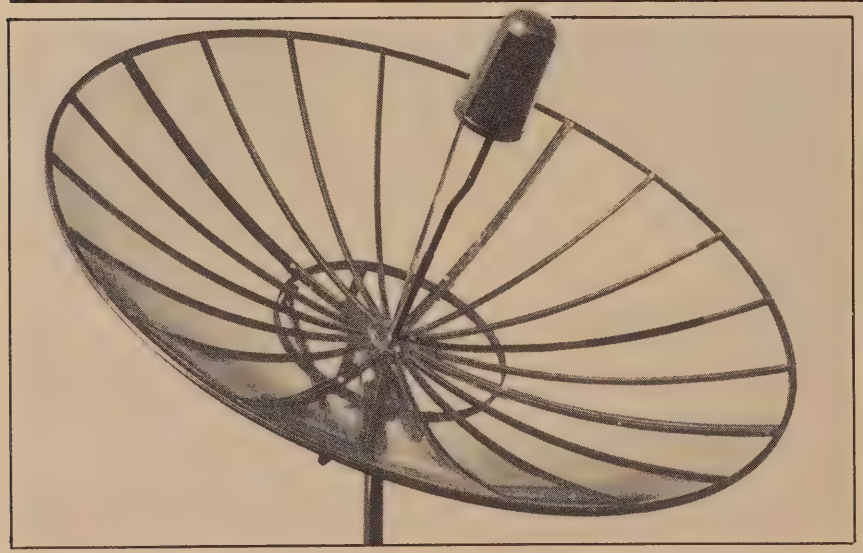
AUTOMATION TECHNIQUES' NEW MODELS

■ Automation Techniques has introduced three new models of satellite TV receivers for 1986. The three join the newly redesigned GLR-500 and GLR-500BD models to form the firm's new model line. The new units include the new GLR-500R, the DSR-900, and the new Automation Techniques Eclipse.

The GLR-500R provides infrared remote-controlled convenience with large LED informational readout. The unit features automatic power-on and soft-touch operation for all functions.

The DSR-900 boasts full channel scanning and a full-function infrared remote. The unit offers soft-touch controls and LED graphics display.

The Eclipse gives the viewer full antenna aiming control with a built-in actuator. Unit operation is by infrared remote control and the model includes stereo sound reception along with one-button tuning. Information on the Automation Techniques line for 1986 may be obtained by calling toll-free 1-800-222-6044.



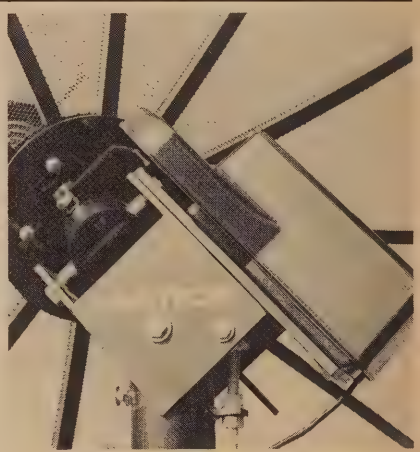
NEW PERFORATED ALUMINUM DISH

■ Odom Antennas, long recognized as one of the leading manufacturers of fiberglass satellite TV antennas, has broken with tradition. They recently introduced a new, 10-foot, perforated aluminum antenna designed to serve the needs of the quality-conscious customers who prefers an aluminum antenna.

The new Odom Classic, 10-foot perforated aluminum antenna offers quality and durability in an economical, yet easily-assembled unit. The antenna features four-quadrant construction designed specifically to be both 4 GHz and 12 GHz (Ku-band) compatible. The lightweight (75 pound) antenna has an F/D ratio of .35 and a focal point of 42 inches.

With proper assembly and installation, the antenna's accuracy and design offer economy and long-term quality performance. It is backed by the Odom 5-year limited warranty.

For more information, contact: Odom Antennas, P. O. Box 1017, Beebe, Ark. 72012, (800) 643-2950, (501) 882-6485.

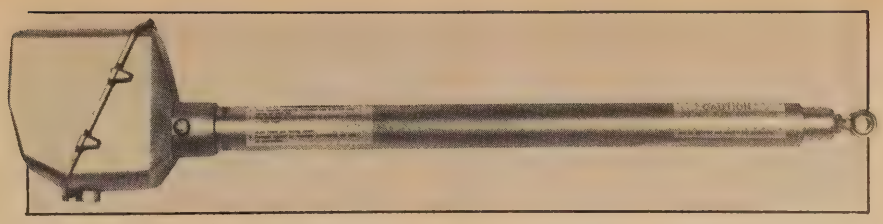


NEW ACTUATOR

■ The Questron horizon-to-horizon actuator recently introduced by Orbitron is a bolt-on 36 volt actuator that fits any Orbitron satellite antenna with the Spinclination feature. The actuator comes equipped with a 10k potentiometer and an optical interrupter built in so compatibility with most actuator controllers and receivers is assured. The compact self tensioning chain drive will sustain a static load of 2,000 pounds. A low cost programable controller is also available from the company.

For more information: write Orbitron, 351 S. Peterson St., Spring Green, Wisc. 53588, (608)588-2923.

TOP-OF-THE-LINE ANTENNA ACTUATORS

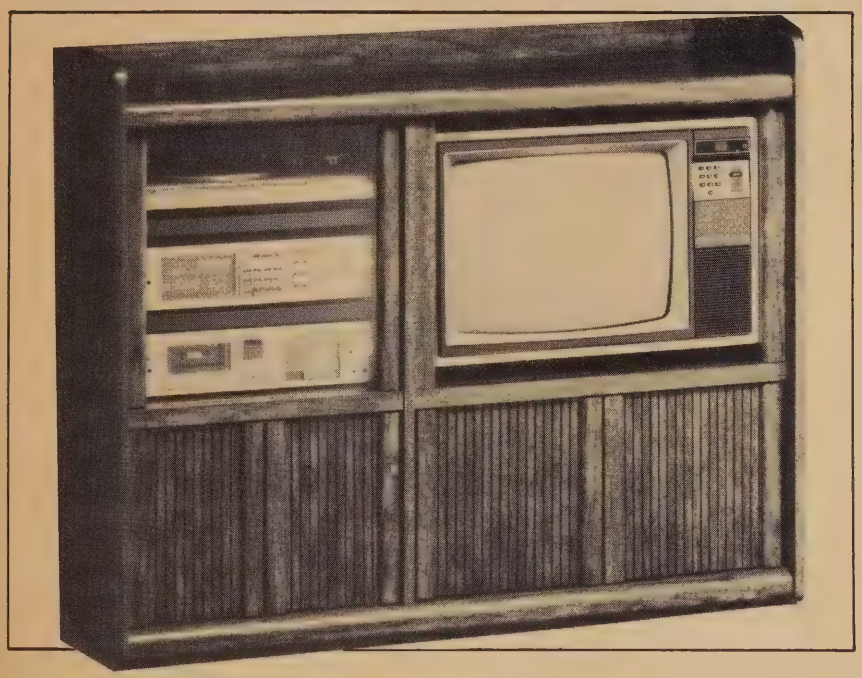


■DX has also introduced the CIC-18 and CIC-24 Satellite Antenna Actuators.

These all-weatherproof 18- and 24-inch arms feature totally enclosed housing and a tight joint structure, superior load and thrust ratings, and 1/2-inch swivel-type mount for smooth movement and preventing side loads.

Both feature a 1/10 HP permanent magnet 36 VDC motor which is enclosed in a gasketed die-cast aluminum case that represents an industry breakthrough. The rated applied load of the actuators is 660 pounds. The rated static load is 2,200 pounds.

The actuators are designed for use with the DX DSB-400 Antenna Positioner and the DSB-300 East/West antenna positioning power supply. In addition, DX also plans to supply the CIC-18 and CIC-24 to other satellite equipment manufacturers on private label basis.



HOME ENTERTAINMENT CENTERS

■Highpoints of the new Gallery Collection from Bush Industries include two home entertainment centers: a low profile TV/Audio center (Model AV755) and a full Video/Audio center (Model AV765).

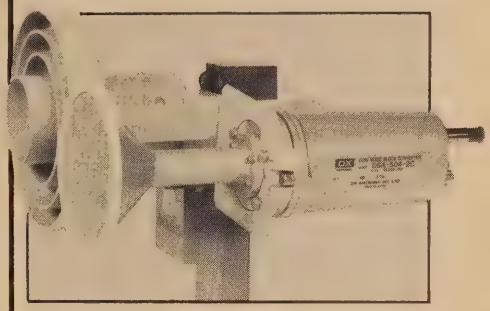
Both units feature pecan wood tones. The doors for the storage area are reversible, so consumers have a choice of a consistent, wood grain look or a contrasting style with dark brown doors.

Adjustable width TV compartments create a clean, customized look. The two centers can accommodate standard or component televisions up to 27 inches wide and 19 inches high. Adding to the units' uncluttered appearance are the enclosed cabinets, which provide ample storage for videocassettes, records, tapes, and accessories.

The audio compartments of the entertainment centers have tempered, safety glass doors. Model AV755 contains one glass door with two adjustable interior shelves, while Model AV765 has twin glass doors which enclose three adjustable shelves. This unit's framed audio doors provide a "system" look for the current 17-inch wide components, but its interior dimensions are large enough to accommodate older, 19-inch components. In addition, Model AV765 features a pull-out shelf for top-loading VCRs.

With a suggested retail price of $279.95, Model AV755 measures 48-1/4 inches wide by 39 inches high by 17-3/4 inches deep. Model AV765 carries a suggested retail price of $329.95 and contains overall dimensions of 48-1/4 inches wide by 47 inches high by 17-3/4 inches deep.

For more information, call 1-800-228-BUSH or 1-800-248-BUSH (in N.Y.).



C AND KU RECEPTION

■Responding to burgeoning consumer interest in Ku-band reception, DX Communications has introduced an affordable way to get both bands from the same dish.

The new DX development is an economical mounting bracket (DS-850) for attaching its 12 GHz (Ku-band) LNB Model DSA-504-2C to an existing 4 GHz (C-band) only system.

This device takes into account that more and more programming is going over to Ku-band, and that business-to-business applications of satellite technology, such as data transmisson and teleconferencing, are also increasingly going over to this band.

Last year, with the introduction of the Models DSB-600 and DSB-700, DX was the first company in the satellite equipment industry to provide its home receivers with the ability to receive both C and Ku-band signals.

The company has introduced a complete new line of Ku-band equipment and accessories as well. Besides LNBs, feedhorns, and other special application accessories, DX also provides a line of 12 GHz offset antennas in .75, .90, and 1.2 meter sizes.

The DS-850 mounting bracket has a suggested retail price of $48.

For further information, contact DX Communications, 10 Skyline Drive, Hawthorne, N.Y. 10532, (914) 347-4040.

ON-THE-GO SYSTEM

■ Toki has developed the first truly portable satellite system, the TASSO, designed and built for people on the move. As easy as opening an umbrella, this complete 5-1/2-foot system sets up in less than 15 minutes. Everything but the receiver fits into a square carrying case 4'9" and weighs only 45 pounds. The receiver is the Toki 150B, a block down receiver with digital display, detent tuning automatic polarity switching, illuminated signal strength meter. Also included are 100 feet of all-in-one cable, feedhorn, 85° LNA and a 3-year in-home limited warranty.

For further information on this system call 1(800) 362-3621.

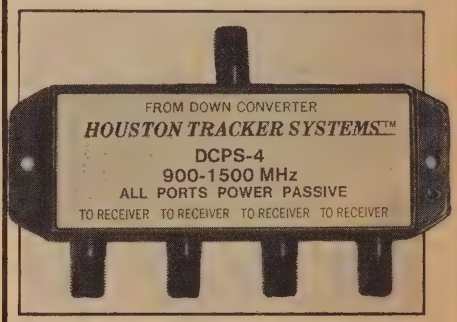
VIDEO LINK

■ Video Link® announced the first deliveries of the new XL400 Wireless Remote Control RF Switcher. The XL400 is a fully electronic switcher, with four inputs switchable to three outputs. Switching of inputs to the output can be done by wireless remote control. Switching of inputs to the #2 output can be performed remotely, using the pushbutton included or by wireless remote using an optional XTRA-LINK®. XTRA-LINK® is the patented Wireless Remote Control Extension System that allows videophiles to operate and control any IR remote controlled component from a remote location (e.g., bedroom, den or kitchen). "The popularity of infrared remote control has grown to the point where it is almost a standard feature on both VCRs and satellite receiver components," noted Eric Fleetwood of the firm. "Certainly a wireless remote control electronic switcher represents the state of the art."

The XL400 is available from Video Link®, division of Xantech® Corporation, 12950 Bradley Avenue, Sylmar, Calif. 91342, or call (800) VID-LINK.

IT YOURS—FREE

■ Have questions about video tape? Then Maxell has the answer, or we should say, answers. Available free from the company is "The Maxell Video Tape Handbook," a 48-page color-photo packed guide that is perfect for anyone who owns a VCR. The handbook goes into detail about types of tape, how a VCR works, what qualities to look for when you buy tape, and many other tidbits. To get a copy, write to Maxell Corporation of America, 60 Oxford Dr., Moonachie, N.J. 07074, attention, Gerry Ghinelli.



HELPFUL SPLITTERS

■ Houston Tracker Systems is now offering, as optional satellite system accessories, two-way and four-way all port (DC pass) receiver splitters. These splitters provide maximum capability to multiple receiver installations by allowing any slave receiver to operate independently of the master receiver. Applicable to both single and dual feed LNA/LNB systems, these splitters pass power when any receiver, master or slave, is turned on. Use of these splitters also eliminates the problem, in dual feed installations, where the slave receiver must operate on the same polarity as the master receiver.

For additional information on splitters, call Houston Tracker at (713) 784-8953.

NEW DISH

■ Orbitron recently introduced their new Econo-Tron Ten dish with all the features that has made the Orbitron Ten one of the most popular antennas on the market. The Econo-Tron Ten is a 12-rib UPS shippable antenna with black anodized aluminum ribs and heavier gauge powder coated aluminum mesh panels. The polar mount is the standard powder coated Orbitron mount with the unique "Spinclination" feature that allows the antenna to be rotated in place to facilitate mesh installation by one person. The declination is set by spinning the antenna until the arrow on the hub points to the site latitude on the mount. Assembly time is approximately 45 minutes. The Econo-Tron Ten is a low cost, lighter duty antenna with a respectable gain of 40.1 dBI and a weight of only 158 pounds. The antenna carries a 5-year limited warranty and has been designed to withstand 80 mph winds.

With Panasonic industrial satellite receivers, the message is clear.
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Whether it's a conference with a client on the west coast or a signal from a super-station on the east coast, Panasonic satellite receivers get right down to business.

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Each channel is easily set by readily accessible tuning potentiometer which, together with the crystal controlled phase lock loop AFC, provide "rock steady" tuning stability. If a power failure occurs, there's no resetting the Ku/C-6000, since its mechanical switches remain set regardless of power interruption. Dual audio demodulators provide flexibility.

In addition to the Ku/C-6000, Panasonic offers a full line of matched distribution components. Including TI filters, power splitters, line amps and directional couplers.

Look into Panasonic Industrial Satellite Receivers. You'll see why the message is clear.

For more information, contact: Panasonic Industrial Company, Video Communications Division, One Panasonic Way, Secaucus, NJ 07094.

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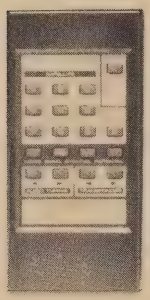
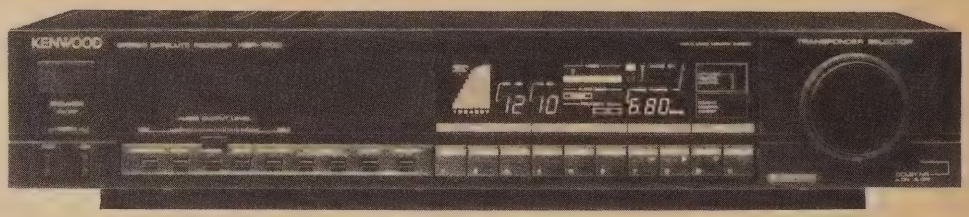
TEST REPORT

THE KENWOOD KSR 1000



An in-home review of a top-of-the-line receiver.



By Robert Angus

My first experience with Kenwood electronics components goes back more than 20 years, to the early 1960s when I discovered one of the company's very first hi-fi stereo receivers on the shelves of a store in New York City. I bought it and instantly fell in love with its low price, its quiet good looks, and its first-rate performance. In the period since, I've had the pleasure of owning other pieces of Kenwood audio and video equipment, and I've found them all thoroughly reliable, excellent performers which offered value for money.

If that indicates that I may have approached the job of reviewing the company's first satellite receiver with more than a little bias, I plead guilty. I tell you up front so that you will have a frame of reference to judge what follows.

The Kenwood KSR-1000 is one of the first of a new generation of user-friendly satellite receivers which eliminate the need for most of the chores which used to be involved in tuning satellite programs. When I bought my satellite system in 1980, I found myself heading out to the dish with a flashlight and portable TV set every time I wanted to move from one bird to another (there weren't all that many to choose from back then). I'd jockey the dish back and forth while watching the monitor, then trot back into the house to select the transponder I wanted and fine-tune it. Every time I'd move from Anik to Satcom, or from an odd to an even channel, I'd have to repolarize. And although stereo sound simply didn't exist then, when it came along, I'd find myself trying to fine-tune subcarriers with a rotary knob which was less than precise. Although my most recent receiver, a 1984 state-of-the-art model, eliminated several of these steps, I discovered that my wife was afraid to use it whenever I was away from home.

Enter the KSR-1000. After you've positioned your dish for the satellite you want to view, all you need do is dial the transponder and the receiver does the rest. It not only clicks the channel into view, but polarizes and fine-tunes itself. Since there's a digital readout of the audio frequency, it's a simple matter to tune precisely to the subcarrier you want and a memory bank even stores the proper mode to reproduce it. But I'm getting ahead of my story. Let me note here that this was supposed to be a report on the full Kenwood system, including the KSA-1000 antenna actuator, LNB-1000 low noise block converter, and KSP-1000 antenna positioner. Because of problems using an actuator with a stroke length of 18 inches on a 350-pound 12-foot dish, it was impossible to install either the KSP-1000 or KSA-1000, which means that this is a report strictly on the receiver and its accompanying block downconverter.

"This is one of the first of a new generation of user-friendly satellite receivers which eliminate most of the chores which used to be involved in tuning satellite programs."

The receiver looks more like a high fidelity component than a piece of satellite gear. Styled in black matte with illuminated blue graphic and digital readouts, it looks perfectly at home with Kenwood's current stereo audio receiver and VCR. The unit is 17-1/4" wide by 3-3/8" high and 13" deep, which means that it can be mounted in most present-day equipment racks along with other audio and video equipment. Ten programmable pushbuttons can be used to position the antenna when the system is fully operable (mine was not). A large rotary tuning dial selects the transponder of your choice, and a pair of front-panel pushbuttons tune the subcarriers up or down. A "memory" key stores relevant information about the stereo modes, audio subcarriers and the like for up to 12 transponders. The main stereo mode data for the most common transponders is preset at the factory. A "memory clear" button erases any goofs or facilitates your change of mind. There's an audio mode selector to enable selection of wide or narrowband operation and the appropriate stereo matrix in the case of new channels or those not factory programmed. Once these are entered into the receiver's memory, there's no need to bother with the controls again. There's a "scan" button, to enable the user to review the entire menu on a given satellite by pushing a single control; and a parental lock feature which not only puts selected transponders off-limits but also locks the antenna positioner,

(Continued on page 80)

WHAT'S ON KU

(Continued from page 58)

Unfortunately, none of this is of any good to dish owners (either with generic or retrofitted Ku equipment) since these transponders will be scrambled using Scientific Atlanta's B-Mac encryption technology, which is not, as yet, designed for consumer descrambling.

Of course, no one is denying that the current lack of Ku programming will ease as more Ku systems become available and as the home satellite market continues (as it must) to move into those urban areas where a host of zoning ordinances and microwave interference problems exclude the use of large, C-band dishes.

However, make some inquiries before you pay out any money on a Ku system. As one industry pundit warned: "Virtually nobody knows what's going on up there right now because so few people have Ku-receiving equipment in the field. That makes it very difficult to know what can be seen and what can't, and I'd advise anyone thinking of investing in Ku-band equipment to check out the programming they can get before they make a purchase or embark on a retrofitting installation."

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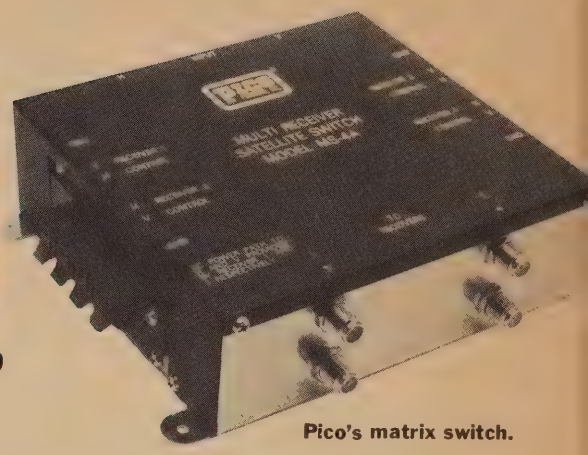


Pico's matrix switch.

By Dan Chimeliewski

For many audio/video buffs, purchasing a home satellite television system means reaching the Shangri-La of electronic home entertainment. However, increasing viewing choices by more than 100 channels doesn't solve a problem common to many households: Dad wants to watch sports, Mom wants to watch a feature movie, and the kids "want their MTV." Consumers can find a solution to this problem by upgrading their home satellite TV system to serve as many as four receivers (and TV sets) so everyone in the family can watch the program of their choice.

Most multiple receiver systems are either a dual-feed block down conversion system, or a single conversion master/slave receiver system. A *new* low cost way to create a multiple receiver system, which avoids the complicated interconnections of equipment with components, uses a multiple receiver satellite switch. It provides independent selection of each of the 24 transponders on a satellite by up to four receivers.

Multiple receiver satellite switches, or matrix switches as they are sometimes called, allow the hook-up of two, three, or four receivers to one dual polarity dish without having to purchase additional equipment. A matrix switch is simple to understand, operate, wire, and install because it places all the components needed for a multiple system in a compact enclosure in one central location.

Each multiple receiver satellite switch contains two high frequency line amplifiers, two 4-way power dividers, two D.C. power inserters, and four pin diode A/B switches which are internally pre-wired.

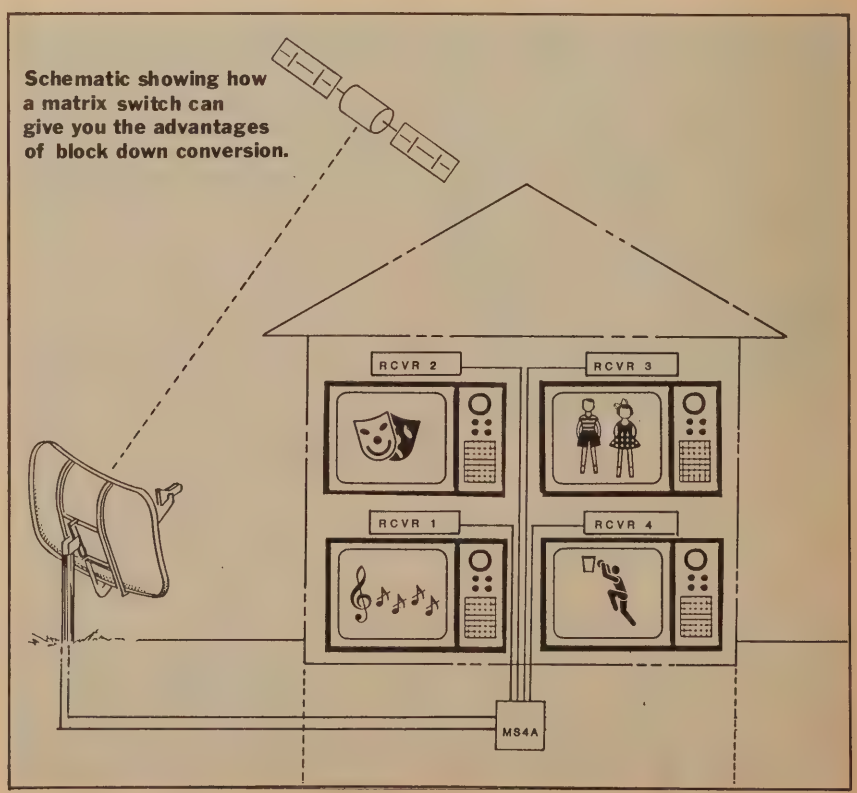
The only drawback to the multiple receiver system is that each receiver can view all transponders on only one satellite at a time. Galaxy 1, with its premium movie channels and superstations, is probably the most watched satellite by multiple system users.

Block down conversion receivers can collect 12 vertically polarized channels or 12 horizontally polarized channels off a satellite. By adding another LNA, block down converter, and switching equipment, *any* receiver in a BDC multiple system can select *any* transponder for viewing. Two LNAs, block down converters, switches and power dividers are needed to isolate, or separate the receivers in the system from each other, and to isolate the horizontal and vertical satellite signals being received by the antenna. This is why *any* of the four receivers in a multiple BDC system can select *any* program on a satellite.

In a master/slave multiple system, the system's functions are handled by the "master" receiver, and are repeated by the "slave" receivers. The major drawback to a master/slave multiple system is that slave receivers can view only channels with the same polarity as the one being viewed by the master receiver. The slave receiver must select from just 12 available transponders.

For the do-it-yourselfer or installer,

(Continued on page 82)



Schematic showing how a matrix switch can give you the advantages of block down conversion.

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SITE SURVEY

(Continued from page 18)

you conduct will only give you a rough idea if your location is suitable for a satellite dish and will not tell you if you are going to experience TI problems. A thorough dealer survey should be conducted before buying any equipment and having it installed.

Your site survey will tell you, however, if you should proceed with a dealer survey. In some cases you will discover that your location is totally unsuitable for reception of satellite signals, or that with some modification of the landscaping (cutting or pruning trees) you may be able to install a system, and have a clear shot to the satellites. Again this do-it-yourself site survey is only intended to give you a rough approximation of where to locate your satellite dish, and if your dish will be able to "see" some or all of the satellites from your proposed location.

There are "commercial" site survey devices available costing over $100 that will allow for a precise site survey, but for our purposes the $5 package we have assembled will do nicely for a "coarse" survey.

Almost any magnetic compass will be adequate for the job but we found an "engineer's" type compass at a local Army/Navy store for $4. The engineer's compass has a hairline guide for reasonably accurate siting along any given compass point. The compass we bought also was equipped with a siting device at the rear of the compass which contained a lens that allowed for simultaneous viewing of the hairline guide and compass point. This proved to be a big plus for site survey purposes.

In the past we have found that everything from a very basic compass to automobile-type bubble compasses also worked well for coarse site survey work, but this relatively inexpensive engineer's compass with siting lines proved to be the most accurate.

The geosynchronous satellites are positioned from 140° west to 62° west longitude directly above the Earth's equator. To aim a satellite dish you will need to know the horizontal direction of the satellite from your location (azimuth) and the vertical height (elevation). Depending on your location you may be able to receive only a few of the satellites or most of them. The factors that govern that are your geographical location and whether or not you have a clear shot of the satellite belt.

Even areas that seem fairly clear of obstructions may not have a clear line of site for every satellite visible to your area. The site survey will tell you whether you can see the majority of the satellites or only a few from your location.

For example if your house is surrounded by 100-foot-tall trees on an 80 by 40 foot lot obviously you do not have a clear line of site to the satellites. In a recent site survey we conducted such a situation existed and only one satellite could be "seen" from one tiny area of the yard, and that particular satellite only had a pair of active video channels. There are two obvious remedies to this type situation: (1) cut the offending trees down; and (2) build a tower above the tree line. Neither alternative in this case was acceptable because some of the trees were on a neighbor's lot, and a tower that would afford a clear line of sight was beyond the budget of the individual who wanted to install the system. If the budget can bear it there are towers available that would do the job. If you are considering a tower installation be sure to check with your local zoning board before buying and installing it.

We previously mentioned that the two prime coordinates you will need to know for siting the satellites are the azimuth and elevation.

To determine the coordinates for each of the satellites in your area requires a simple computer program or a friend with a satellite system that knows the coordinates for your area. A dealer in your area will also have this information but it is unlikely he will provide it without some kind of commitment to purchase from them, and in that case they will, or should, conduct their own site survey.

Don't give up hope! There is another way to calculate the azimuth and elevation for the highest and lowest satellite visible in your area which is really all you need to know.

For example, Galaxy 1 is generally visible to most locations on the North American continent as is Satcom 4. The azimuth and elevation for Galaxy 1 in San Francisco, Calif., is 44.8° elevation and 198° "true" north while the coordinates for Boston, Mass, would be about 10.3° elevation and 252° true north. We say *true north* because the azimuth numbers are calculated from true north and there's the rub. Your compass reads "magnetic" north and because iron in the Earth creates irregularities, called magnetic deviations, your compass reading could be off by as much as plus or minus 20 degrees from true north. For California you would subtract the magnetic deviation from the true north heading and for Boston you would add the number.

To simplify that further there is line running roughly from Tallahasee, Florida through the western third of Lake Superior that has no magnetic deviation. This line is called the "Agonic line".

Any point east of the Agonic line the compass will point west of true north and at any point east of the line the compass will point west of true north. To find true north you must add or subtract the given magnetic deviation for your area. If you are west of the Agonic line subtract the deviation if your are east *add* the deviation.

Azimuth and elevation coordinates for your area are available from tables, from satellite aiming charts or by calculations. Winegard Corporation has produced an excellent set of maps that give the azimuth and elevation for all of the most active satellites for any point in the U.S.

Armed with the azimuth and elevation for the satellites you can now proceed with the actual site survey.

Pick a location in your yard that has the clearest view to the south. For the Eastern region of the U.S. Galaxy 1 will be southwest of your location, in the center of the nation it will be almost due south and in the Western region of the U.S. it will be roughly southeast of your location.

For San Francisco Galaxy 1 will be at 182° on the compass taking into account magnetic deviation for that area, and for Boston it will by 276°.

The elevation for San Francisco, for Galaxy 1, is 44.8° and for Boston it is 10.3°.

Now sight along the given compass heading for your area (this is where the engineer's compass comes in handy) and if you spot any major obstructions you will go onto the next step. Using the elevation angle for your area site along the homemade "inclinometer" while an assistant checks to make sure the protractor is angled correctly. If it appears that you are clearing the obstruction by a comfortable margin then it is a safe bet that the dish will have a clear line of sight to the satellite (Galaxy 1) at that location. If not move to a different location in your yard and start all over again. Sometimes it may be a matter of moving only a couple of feet to clear manmade and natural obstructions.

If you have an inclinometer then your should place it on a carpenters level and have your assistant check the angle setting (above the earth's

horizon) to make sure it is correct for your location, and for the satellite, while you sight along the level to make sure the area is clear of obstructions.

When you have completed the survey for Galaxy then you will want to move up to a higher satellite to make sure you have a clear line of sight for that bird. Usually you will sight for satellites at extreme ends of the arc normally visible to your location. Most dealers use Galaxy 1 as the lowest satellite and Satcom 4 as the highest satellite for the East coast. On the West coast the situation is a bit different because many of the most active satellite are located at very high look angles (above the horizon) because of their location in the satellite belt. At San Francisco for example Galaxy 1's elevation would be about 45° while Satcom 4 would be about 30°. On the East coast Galaxy 1 (at Boston) would only be about 10.5° above the horizon while Satcom 4 is about 40 degrees above the horizon. This anomaly occurs because the most active satellites are located very close to the California coast or within about 15 degrees of it over the Pacific Ocean.

If you follow the simple steps for this do-it-yourself site survey you will have a rough approximation of whether or not your location is suitable for a home satellite TV dish and system. Keep in mind however this will only give you an approximation of whether or not your site is suitable and if you have any doubt in your mind after conducting your own survey call in an expert, you local home satellite TV dealer. •

SUPER BOWL

(Continued from page 15)

tagging up, I want to see him racing for home and the dirt flying and the umpire's nose right in there to see it. I don't want the ump to say, "Let's wait and look at the TV replay." You would lose part of the charm of the game. And, don't forget that camera angles can lie, too. And what if you're seeing an eighth angle on a play and you see a guy is holding on the play? It just opens up too much. I say they're using the best available officials and let's just let it go at that. Let's accept it that way."

Midway through the 1985 NFL season, some superstars were being dogged by persistent but apparently unfounded rumors. Miami quarterback Dan Marino was the victim of a vicious rumor about late-night drinking before a game at New England and his San Francisco counterpart, Joe Montana, went public in denying gossip about drug use. Is dealing with such "dirt" part of the price sports stars have to pay today?

"I wouldn't deal in such gossip," Enberg said. "I wouldn't say so-and-so was supposedly using this or that last night. I wouldn't pass on gossip. I wouldn't say what I heard. But it's an unfortunate thing that athletes are facing. It's a cloud hanging over them. I think it would be in the best interests of the athletes to accept drug testing, to accept it to a man. Even though it may be an encroachment on their personal liberties and the unions wouldn't like it, it would be in the players' interests. I do think they have an obligation to be an example to young people."

It may not sound like the easy-going Enberg viewers have come to expect but the broadcaster does have an opinion on every sports-related topic. And that includes TV ratings for pro football.

"We went through a leveling off in the ratings," Enberg said. "But they have come back this season. I think we take the ratings much too seriously in our business. What's more important, in my mind, is how we report and describe a game. What if we do a terrific broadcast and the ratings aren't good? Our job is to do the very best job we can regardless. Sometimes, I feel it's a case of the tail wagging the dog.

"I think the ratings have come back because we haven't had the Olympic overload like we did in '84," Enberg said. "But, still, there is no question that the competition for the sports viewer is tremendous. I remember 10 years ago when we did a college basketball game of the week. It was an event and people looked forward to it. Now there are 20 colleges on every week. It's like going to the candy store. If you can go in there every day and have whatever you want, it's not as tempting or attractive."

Enberg was asked about the dismal start by the Super Bowl champs, the Montana-led 49ers.

"That's the toughest thing to repeat as a champion," Enberg said. "Every team that plays the 49ers, even if they're 0-10, will get up for that game. I remember Bobby Knight saying, 'If I can just win one (NCAA) title.' and (UCLA's legendary coach) John Wooden told him in that sagacious manner of his, 'Winning the second one will be the most difficult.' I would agree with that.

"You get all that publicity and pressure. You get drunk on your own whisky, so to speak. It's like boxing. The hungry fighter usually wins the fight."

Enberg claims no ability to tell the future. So he would not forecast which two teams would be in Super Bowl XX. But he does think the sleeper in the playoffs could be out of the AFC Central Division.

"The team that wins in the AFC Central is likely to be overlooked," Enberg said. "They won't have the same sparkling record as some of the other teams. They might be 8-8 or 9-7 but people forget that team won't have to play in the first round. It could be like last year when Pittsburgh upset Denver before losing to Miami. I think Pittsburgh or Cincinnati could be a surprise team." •

"You don't think there's anything obscene on TV? Why, get yourself a satellite dish and a decoder and subscribe to a triple X-rated service and you'll be shocked, my dear!"

CRISTY LANE

(Continued from page 48)

Vocalist of 1978 by the California-based Academy of Country Music, Lane began her recording career solidly enough, with a series of Top 10 singles, "Shake Me I Rattle," "Let Me Down Easy," "Penny Arcade," "I'm Gonna Love You Anyway," and "I Just Can't Stay Married to You," all for her husband's LS Records label. (Stoller, with no previous music business experience, started the label for his wife after every other major label had turned her down.)

With that success, Lane was offered a contract with United Artists/Liberty Records, which broke her first number-one hit, "One Day at a Time." Other of her U.A. singles—"Simple Little Words," "Sweet Sexy Eyes," and "I Have a Dream"—got on to the national charts, but Stoller, feeling U.A. neglected the necessary promotion for her record, soon opted to return his wife to their independent label.

That would have been the end of a career for many recording artists, but Stoller was confident he could make Cristy Lane a household name. "I came home one evening and told her, 'After observing everything here in Nashville, I really feel that I've forgotten more when it comes to business than the majority of these so-called executives could ever dream about.'"

So Stoller quickly began advertising Cristy's records on television, even though he learned that more than 75% of all TV records fail. And if that wasn't an ample deterrent, Stoller had several other strikes against him: One, while his wife has a sweet and soothing delivery, hers is hardly one of the most dynamic voices in popular music; two, Lane performs as few as 70 road dates a year, which usually spells anathema to singers on the commercial charts; three, the country music encyclopedias do not bother to list her; and four, in 1982-3, Stoller himself went to prison (unjustly, he claims) for extortion and bribery under the R.I.C.O. (Racketeer Influenced and Corrupt Organizations) Act, stemming from his association with fund-raising events in Illinois before he entered the music business.

To his credit, however, Stoller was savvy enough to figure out that the hardcore country and gospel audience readily embraces a singer who makes sincerity her main concern. He also instinctively knew that his wife's humble origins (born as Ellie Johnston, the 8th of 12 children in an impoverished Illinois family) would go a long way with people of similar circumstances, and with people who drew inspiration from her life and music.

And so, in prison, Stoller wrote the story of his wife's life, and of their life together. Titled—what else?—"One Day at a Time," the book melodramatically traces Lane's psychological setbacks in life—her extreme shyness as a child, her numbing poverty, her prominent childhood lisp, and her diminutive frame and body size (she weighed 40 pounds at the age of 10).

All of this, Stoller writes, worked to instill an emotional fragility and sense of worthlessness in his wife that vanished only after he pushed, cajoled, and finally forced her into "becoming" Cristy Lane and pursuing a professional singing career. If he is unsparing in detailing his wife's early frailty (even including her two overdoses of tranquilizers and "nerve pills"), he owns up to his own marital infidelity, his gross errors of judgment (he insisted that Lane tour Vietnam in the late '60s, where an illness nearly killed her), and his goal of becoming a millionaire by the age of 40.

("Cristy didn't feel right about making money off gospel songs, and it was not until Lee pointed out how much the song meant to those who heard it... [that] she listened," Stoller writes with his collaborator, Pete Chaney.)

Such confessions, of course, are the stuff of great country music, and the public apparently cannot get enough of it. Stoller has written a screenplay based on the book, and is currently talking with producers about a theatrical—not a TV—release, starring his wife as herself, and their youngest daughter, Cindy, as the young Ellie Johnston.

"I couldn't do the same thing with a Barbara Mandrell or a Dolly Parton," Stoller says. "They've sold a few records, but they don't have the mass appeal that it takes to sell millions of records. People can really relate to Cristy's warmth, to her Girl Next Door quality, and to the fact that she doesn't come on trying to be something she's not. She's just herself, take it or leave it."

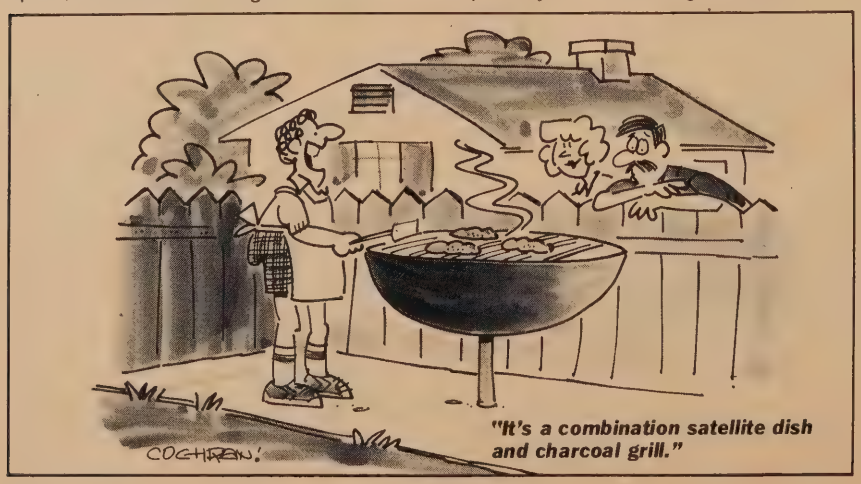
Maybe so, but when pressured, Lane admits that Ellie Johnston Stoller and Cristy Lane are still two separate personalities, "although Cristy Lane has taken over a lot in the last few years. I hardly recognize the gal that first started singing."

And if it took her husband to stir her ambition to sing, Lane says "I always had the need, and I guess I was willing to sacrifice whatever it took. I realize my children went through a lot, and I would never put them through that again, if I had to go back. But I would like to be able to keep coming out with songs that would give people a positive outlook on life, instead of so many songs that deal with cheating and marriage failure—negative things."

So the letters pour in, and people come to her personal appearances with stories of how her version of "One Day at a Time" stopped them from committing suicide, and how their loved ones "gave their hearts to Jesus" after hearing her albums.

"Sometimes that gets frightening," she says softly, knitting her brow, "because I think sometimes they do try to say that it's me. I just sing songs the way I feel them, and I think those feelings come through to people. But as Lee says, it's a force bigger than I that works through that.

"I would never want to take credit for saving someone's life. I just hope that people get a lot of good out of the songs, that they have a good feeling in their hearts, and that they live day to day by that, with faith in God and in themselves. Some people may think it's corny, but it's really true. You just have to take it 'One Day at a Time.'"



"It's a combination satellite dish and charcoal grill."

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ACTUATORS

(Continued from page 23)

and reliability.

This type of sensor utilizes a solid state light source (infrared or visible) and a detector. Between the light source, known as the "emitter," is a rotating wheel with equally spaced holes which alternately block and allow the light source through to the detector. As the light strikes the detector it produces a pulse which is sent to the controller thus providing a count. The Photo- or Opto-type devices produce a high pulse rate which results in higher accuracy in positioning the dish.

Potentiometer

The 10 Turn Potentiometer, or "pot," is one of the oldest devices used in feedback systems. The pot is an electronic device that utilizes electrical resistance to a voltage in conjunction with a "rotor" and "wiper."

The pot is a reliable device and is sometimes used in conjunction with other sensors.

The important thing to remember about any sensing device is that it must be compatible with your controller. This is important when you are considering upgrading your system from a simple east/west controller to a more complex programmable type.

Your dealer should be aware of this and generally will know which type of sensing device is used with a specific brand of actuator, but you should also be aware of the sensing device in your actuator when upgrading your system. Not all controllers will interface with all actuators so it is important you know which ones will, and the simplest way to do this is to know the type of sensor used in your actuator. You could, of course, replace both components at the same time, but this would significantly increase your cost.

We mentioned earlier that controllers have evolved into some very sophisticated pieces of equipment. Today they range from simple east/west devices all the way up to microprocessor controlled, artificially intelligent electronic devices.

Some receiver/controller combinations actually sense the strengh of the satellite signal and automatically position the dish to the strongest signal.

"Smart" systems such as this are at the high end of the satellite market but offer a very consumer friendly system to the end user and require much less set up time.

That leaves us with the low and middle end buyer.

Many receivers available today offer either controllers built right into the receiver or an interfaceable controller from the same manufacturer. This, of course, obviates the need to shop around for a separate controller, but these systems tend to be in the mid- to high-price range.

Some controller manufacturers also offer an interface for analog or digitally controlled remote receivers which helps to eliminate handheld control clutter.

Other manufacturers offer wireless remote controlled actuator controllers that require a separate handheld unit to operate and some of these controllers are among the finest on the market today.

The choices almost seem limitless and really are more dependent on your budget than on the controller's capabilities.

Among the chief considerations when shopping for a controller however is whether it is programmable or not, and how many satellite positions will the controller store. Some are only capable of storing a dozen or so positions while other controllers are capable of storing more than 100 positions—this by the way, is a throwback to the type sensing system used with the actuator. It also ties in directly with the type of actuator you are planning to buy.

Currently the linear actuator is only capable of seeing about 60 or 70 degrees of the satellite arc. There is a new arrival on the home satellite TV scene that literally expands your viewing capability horizons. The horizon-to-horizon motorized mount (we call it the H2H mount) allows the dish to be moved through a 140 to 180 degree arc and eliminates some of the problems commonly associated with linear actuators.

While the necessity for such a device as the H2H motorized mount is not imperative, future launchings of communications satellites in the geosynchronous arc makes such a mount desirable.

Currently the desirable portion of the satellite arc is occupied or has already been spoken for. The Anik series of satellites, for example, occupies one of the best portions the satellite arc along with Westar 4. Only the extreme east end of the arc remains for future satellites, and there are several dozen companies bying for space in this area of the arc. Current actuators cover the most active portion of the arc at this time but as new satellites come on line at these extreme ends of the arc most actuators will not be able to aim the dish at them because of their limited movement.

The horizon-to-horizon mount more or less takes up where the linear actuator left off, and they should become more commonplace as time goes on. Some dish manufacturers are currently incorporating a horizon-to-horizon motorized mount right into their dish so you well may want to take a careful look at these new dishes and mounts.

Currently there are very few manufacturers of retrofittable horizon-to-horizon motorized mounts which usually requires replacement of the entire dish mounting system. Some dish manufacturers will not honor their warranty if a different mounting system is used, other than their own, so you need to check into that possibility if you are retrofitting your dish or are shopping for a new one.

No matter what type of actuator, whether it be the H2H type or linear actuator, it must incorporate "limit switches" in its design.

These are usually very straightforward mechanical devices that tell the controller when to stop feeding power to the motor and thus stop the arm or gears from moving.

Limit switches are as their name implies, limiting switches. They limit the amount of travel at the upper and lower extent the arm or gear can travel. However, some limits do not involve any type of mechanical switch but rely on the programmable controller, and thus the user, to set the limits. Usually the dealer will set the limits when installing the system, but sometimes something as simple as a power outage or a curious three-year-old can wipe out the program and serious damage to the actuator can result.

In the case of a mechanical system the switch itself would have to fail for some reason to cause problems, but in the case of programmable limits you will want to buy a controller that contains a battery power backup or "non-volatile" memory system to retain the program.

Many problems associated with actuators can be directly related to limit switch problems and it doesn't take much overextension or over retraction to damage the arm or motor. With that in mind some controller manufacturers now build sensing devices into their controllers which will automatically shut down the actuator if it does not move

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within a prescribed period of time (two or three seconds) or if the motor begins to overheat. This is a nice piece of added protection and should be considered when buying or upgrading a system.

There is one last type of actuator system that practically eliminates all the problems associated with actuators and controllers called the "manual system."

This simple device costs about $25 and was actually one of the very first antenna positioning systems used when it became desirable to move the dish.

This very basic system is known as the handcrank or manual jack and requires the user to walk out to the dish and manually turn a crank to jack up or move the dish to receive other satellites.

If you are a "no frills" person then this very low cost approach to dish positioning may be for you. But when the temperature plummets to well below zero and the snow is waist deep, the drawbacks to this type positioning system are obvious. perhaps that is why actuators, and indeed actuators and controllers with all sorts of bells and whistles have evolved.

Some key points to remember when shopping for an actuator and controller as a new product or as an upgrade to your current system are compatibility, accuracy of the actuator (no slop or play) or does it come to a complete stop when it should, ease of use, programmability, number of positions it can store in its (non-volatile or battery backup) memory, interfacibility with other components and cost.

Another key element that ties into interfacibility with other components is whether or not the controller will handle polarization and format functions.

Some controllers are completely automated in this department which is a big plus, especially in remote controlled systems, and represent the more user friendly system. Most controllers available today are equipped with automatic polarization and format control at very little additional cost to the buyer. The low end systems, however, still require a separate polarization and format control or are controllable through the receiver but require that the user remember or have a reference to the correct polarity and format plus skew adjustment for each satellite.

Whichever type of dish positioner and controlling system you buy is obviously up to you and your wallet, but keep all the various options in mind when shopping for or upgrading your system. •

FORECAST '86

(Continued from page 24)

the days of NBC Super Bowl coverage here, look for major increase in Ku-band equipment for sale by the leading manufacturers.

7) Dish reduction to 4 foot size on C-Band

A direct result of lower threshold receivers as well as hotter satellites, smaller dish size will become common. Expect to see a change from parabolic center-of-dish feedhorn mount to offset feedhorn design. The advantages? Less blockage of dish area means higher dish efficiency (over 90% efficiencies will become possible). Offset feedhorns also provide better TI rejection and better adjacent satellite signal rejection under the new tough 2° satellite orbital spacing requirements.

8) Combo C-Band/Ku-Band Receivers and Antennas

As Ku-Band demand increases, expect to see many manufacturers offering package systems with new dual-band feedhorns which can pick up both C-band and Ku-band feeds simultaneously. Chaparral Communications now has a dual-band feedhorn available. Add to it a dual-band downconverter and dual-band polarizer system and feed this to a single receiver over one wire, and you have a complete dual-band system. Most of the pieces are already here. It's a matter of putting them all together. Of course an integrated dual-band front-end electronics package has yet to be developed. Look for it later this year.

9) 2-way transmission from dish to home

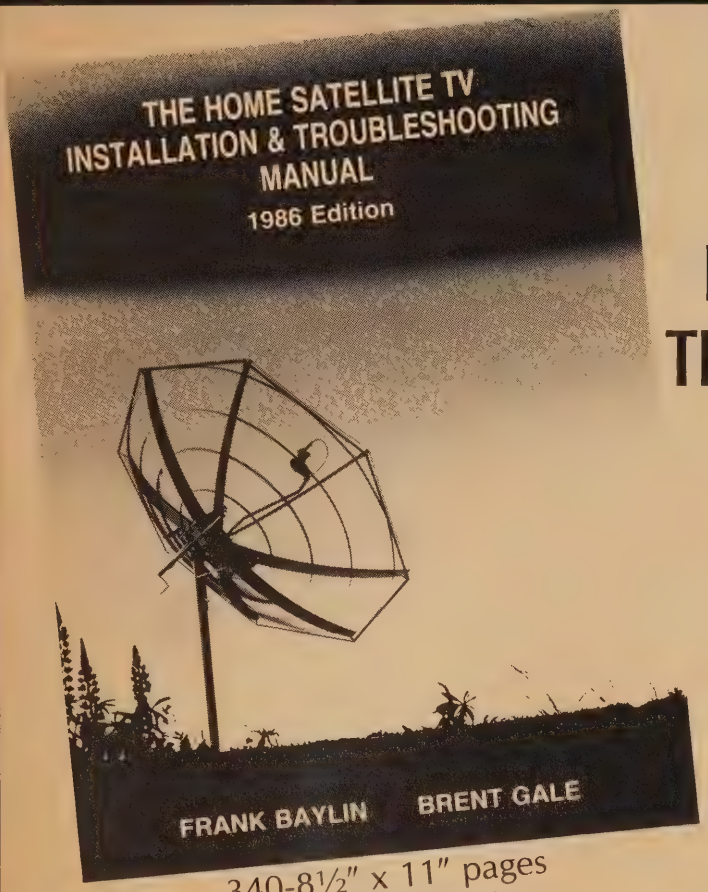
A big breakthrough when it happens, this will eliminate one of the remaining impediments to explosive home satellite television growth, namely how to get rid of that cable from the house out to the dish. Once the signals can be sent via infrared link, the only remaining wire to be pulled is the motor drive power cable.

10) Home-brew descrambler kits become available

This is probably our most controversial prediction. The MaCom Videocipher 11 system uses a flawed standard and may become technologically obsolete before it is widely introduced. A number of smart "hobbyists" are tinkering in basement labs around the country to "break" the system. If that happens, expect to see a flood of bootleg descrambler kits and plans hit the market. This warning applies: If you build your own descrambler, make sure you pay the programming fees for any program you might watch. HBO has to pay millions of dollars to the Hollywood studios for the right to air its first-run movies. Without the viewer-provided revenues coming in, they'd be out of business in weeks. And if that would happen, we all lose. We predict that video-only descrambler kits will hit the "how-to" market by the end of 1986. Program Audio descrambler kits will take a bit longer.

Those are our predictions for 1986. See you next year when we'll check out just how well we did! •

"We can't allow satellite dishes to spring up all over town! They're aesthetically displeasing!"



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UPGRADE RECEIVER

(Continued from page 27)

channel viewing elsewhere in the house.

Here's a quick rundown of some of the features you can expect to find on the new receivers:

- Stereo audio. Until last year, stereo sound either for TV or on the subcarriers was a rarity found mainly on top-of-the-line receivers. It can be channeled to an existing stereo audio system or used with a surround-sound processor to provide theatre-like soundtracks for motion pictures.
- Digital tuning of audio subcarriers. Even those receivers which provided stereo usually were difficult to tune. The new receivers not only provide digital readouts, but the exact settings can be stored in their microprocessor memories.
- Precise tuning and mode selection for TV audio channels. Receiver memories can keep track of whether a given transponder is stereocasting discretely, matrixed or multiplexed—and what's more, what the appropriate subcarriers are; whether optimum sound is narrow- or wideband.
- Automatic polarizaton. Not the big deal it once was, polarization has gotten dramatically simpler with the new receivers which do it automatically whenever you switch from Anik to Satcom (or vice versa) or from an odd to an even transponder.
- Automatic fine tuning. Assuming that your positioner is in perfect working order, this feature automatically adjusts the receiver to deliver the optimum video picture. A marked improvement even over those receivers of a year or two ago which provided front panel controls for the purpose and the difference between night and day compared to those earlier receivers which tended to drift once you had tuned in a good picture.
- Parental lock. Some receivers offer this deterrent to parentally-unsupervised viewing by putting certain transponders off limits. Some locks also limit viewing to a single satellite by disabling the antenna positioner.
- Full function infrared remote control. Not only does this feature save you the bother of getting up every time you want to change transponders or satellites; it also opens the way to control of the system from other points in the house. A feature I expect to see expand in the years ahead.
- Use of multiple receivers. One of the biggest advantages of block downconversion is the fact that it opens the way to the use of two or more receivers to provide alternate pictures off your dish in different rooms in the house (or even in different adjacent buildings). Look for this to expand as more dish owners become aware of the possibilities.
- Dual (C and Ku) band capability. Although they don't talk about it, the manufacturers have built the ability to receive Ku-band satellite signals into most of the new block downconversion receivers. You can't actually receive them without a Ku-band feedhorn and LNA, but that's all you'll need to add to your system when the time comes if your C-band dish is precise enough to accommodate the signals. If not, you may have to buy a small Ku-band dish and mount it separately, but you'll still be able to choose between the two at the receiver with the flick of a switch.
- Noise reduction. One of the problems with satellite reception, particularly on weaker transponders and with stereo signals, is that of residual background noise. A noise reduction circuit such as Dolby B or DNR (for Dynamic Noise Reduction) can help eliminate some of it. Ultimately, audio signals will be transmitted digitally, which will raise the level of satellite audio to that of the Compact Disc, but in the meantime we have to make do with the limited amount of help the noise reduction circuits can provide.
- Precise signal-strength metering. The truth of the matter is that if you have AFC, an antenna positioner and automatic polarization that works, you really don't need a signal strength meter at all. But it's nice to have a meter which is accurate enough to reflect the comparative strength of signals on one satellite to those on another, or of MTV to, say, MSN.
- Styling. Let's face it, those older satellite receivers look like something put together on somebody's basement workbench, at least in comparison to the sleek lines and finishes of today's best receivers. Kenwood's KSR-1000, for example, is styled to match the company's high fidelity and video components, while the Channel Master, Luxor, and Homesat receivers would look at home in any well-appointed living room. Panel information is easy to read yet unobtrusive and controls are easy to handle and use.
- Clamped/unclamped circuitry facilitates the addition of a descrambler. With older receivers, it may be necessary to go inside the unit to make the necessary connection.
- Scanning makes it easy to run through all the transponders on a given satellite when you're searching for something to view. Particularly useful on those sparsely-populated satellites which carry sports events on an occasional-video basis.

"Changing satellite receivers usually isn't as simple as taking an old tuner, amp, or receiver out of your stereo system and putting in a new one."

"We can burn trash in our front yard, let our property run down, or park a semi-trailer in our driveway, but we can't have a satellite dish!"

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- **Educational Program and Dealer Certification Courses**

  Through this program, a dealer can gain expertise in all areas of earth station installation and operation. The program is designed to increase the number of qualified dealers, enabling those dealers to advertise their expertise, thereby aiding consumers.

- **Standards Program**

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- **Statistics Program**

  This program has been developed to collect, aggregate and publish data on the earth station industry. This information will help members and industry representatives in their marketing and financial efforts.

- **Legislative and Legal Council**

  As always, SPACE attorneys stand ready to assist our members with legal problems. The Cable Telecommunications Act, which contains satellite viewing rights language, was recently signed into law by President Reagan. The Act reaffirms the legal right to manufacture, distribute and sell satellite earth stations, and the legal right of home owners to view unscrambled satellite delivered programming on their earth stations. The passage of this legislation is a milestone for the industry and wipes away the "pirate" image that has always confronted it. However, not all of the problems have been solved, and issues such as local zoning problems or how satellite delivered programming will be distributed are issues that continue to inhibit the growth of this industry, and are industry battles still to be fought.

- **Zoning Regulations**

  Zoning issues in all states will be monitored by a newly created task force. A data base describing zoning activities in each state is being established in order to provide immediate and up-to-date information and advice to dealers facing zoning problems. Additionally, a new publication on zoning issues which will supplement "The Satellite Earth Station Zoning Book" is being prepared to offer information and assistance to zoning boards in preparing ordinances on earth stations.

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SCRAMBLING

(Continued from page 36)

Television, and the University Network starring Dr. Gene Scott depend upon contributions from their viewers to stay on the air. Thus, the greater their viewership, the greater their growth.

Some religious programmers such as Gene Scott have gone so far to say that they not only encourage satellite television viewers, but that they are beginning to orient their entire TV ministries around the dish-owning community. Gene Scott even *sells* his own "Doc Sat" dishes on the air!

Scrambling Score for Religious Nets: Highly Unlikely.

Tier II Cable TV Networks

Networks such as The Disney Channel, Playboy, and Bravo/Arts depend upon payments charged to the cable companies. Unlike the commercially-supported programmers, the Tier II networks don't carry advertising. They are more like the pay movie services, but charge far less—typically $1 to $2 per subscriber per month.

The Tier II programmers are an odd kettle of fish. They are carried by the cable companies as a "value added" service in a second (or third) tier pricing arrangement. After the cable subscriber takes the basic local TV programming package for an additional fee he can subscribe to, say, HBO. For yet another fee he can pick up even more satellite networks in a bundled package. Thus, the Tier II programmers are totally dependent upon cable revenues for their existence.

Look for some programmers, such as Disney, to scramble. After all, it was Disney who, a few years ago, sued Sony over the right to sell VCRs to prohibit home video taping of off-the-air television shows. (Disney lost as you'll recall.) But don't expect expensive scrambling technology to be used or high monthly fees to be charged. Channels like Disney need all the revenue they can get, and moderate pricing to the home satellite television market may be just the thing to help their bottom line.

Scrambling Score for Tier II Nets: Moderate-to-likely.

TV Networks

This category may be tough to call. Although CBS has announced its intention to scramble, their engineering department has indicated their concern that scrambling systems degrade the overall picture transmission quality. And CBS is long known for delivering a top-quality broadcast picture.

NBC has already relocated its transmissions to the Ku-band SBS satellite, which provides a form of de facto scrambling in itself, since most home satellite television systems are presently equipped to handle only C-Band satellite feeds. ABC will be the last to scramble, if ever.

Will the networks scramble? Maybe. Tremendous pressure from the network affiliates to prevent any further viewer erosion is now being felt. The cable-delivered satellite channels have already heavily cut into network TV viewing audiences, as have VCRs.

But the TV networks are smart and rich. One possible scenario will see the TV networks scramble their existing terrestrial TV station feeds, and introduce one or more special feeds oriented directly to the home satellite television viewer. Indeed, CBS itself announced plans to introduce a direct-to-home DBS satellite system several years ago.

ABC has operated multiple radio networks throughout the United States for years. What would prevent this same "narrowcasting" process from occurring on the television side of the house? Consider an NBC family entertainment TV network, and NBC all-sports TV network, and NBC all-music network. NBC has already announced that they plan to introduce an all-news network!

Scrambling Score for TV Networks: Moderate probability.

Ad-Hoc Programming Networks

Satellite operators such as Robert Wold are not really programmers, per se, but they do feed hundreds of hours of new, fresh material every week to audiences nationwide. "Entertainment Tonight," for example, is uplinked daily by Wold, in an unscrambled mode. The Independent News Network originates from New York's WPIX nightly.

Every day, dozens of local TV stations send back distant news reports and feature stories to their local TV audiences from around the nation. Several stations, like San Francisco's KRON-TV maintain active Washington, D.C. news bureaus which feed live news programs each day back to the Bay Area.

Few of these ad-hoc programmers scramble. And few are considered likely in the future, although there has been some concern, interestingly, about scrambling to prevent their *competition* from stealing their feeds (not the viewers)! The logistics problems would be immense. Suppose someone forgot to unlock station XYZ's decoder for a priority news story? And how would you handle all the different and incompatible scrambling systems that each ad-hoc network would choose? Buy one of each?

Scrambling Score for Ad Hocs: Low probability.

Video Teleconferencing

Here is one programming group which does scramble today. And rightly so. Satellite-fed video conferences are not "entertainment" (at least not intentionally). They are privledged corporate communications not intended for public consumption. They should be scrambled, and they are.

Scrambling Score for Video Teleconferences: High.

So where are we in all of this? Probably close to 25 percent of all satellite channels will be eventually scrambled—over a gradual phasing-in process lasting through the end of the decade. Many of these channels are not intended for broadcast use anyway (just as private telephone conversations carried via microwave circuits are not "broadcasts").

Of course, home satellite television viewers have never objected to paying their fair share. SPACE, the industry association, has always advocated payments to HBO and others. The question is: how much? While $12.95 a month seems high—perhaps $5 to $6 per month per home satellite viewing family would be quite fair.

The real issue, then, is not scrambling, but the right of the home satellite television viewer to pay a fair fee to watch those viewer-supported channels such as HBO, Showtime/TMC and Disney.

In the meanwhile, the marketplace, Congress, and the Justice Department are all involved in working out a solution to protect the home satellite television viewer while assuring that the programmers can still survive. And as millions of new backyard dishes are added over the next few years, the voice of the home satellite audience becomes louder and louder.

After all, as one industry wag has pointed out, its us versus them. And the us is 2 million vocal home satellite television owners. The them is 10,000 cable TV owners and 20 million disgruntled cable TV subscribers!

TEST REPORT

(Continued from page 64)

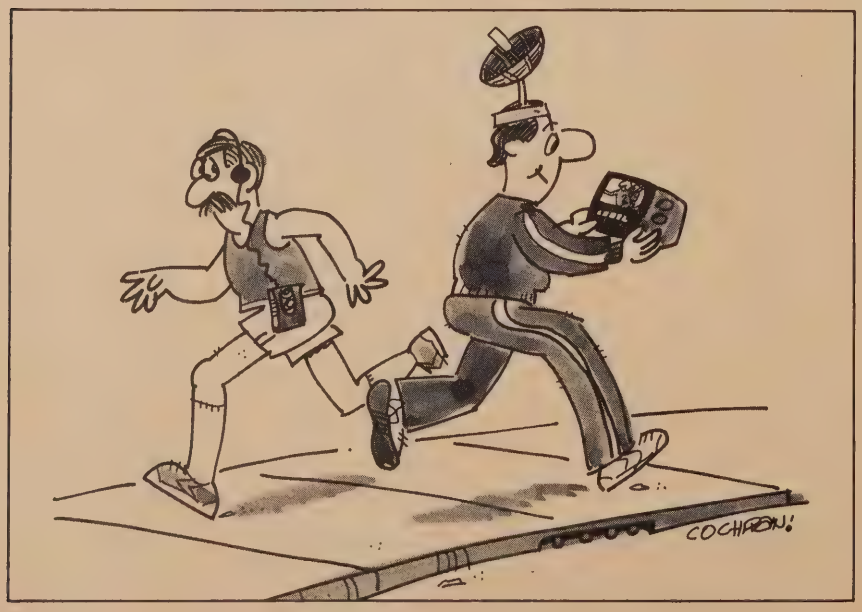
to prevent unsupervised children from playing with the antenna. Because it is a block downconversion system (950-1450 mHz), it's possible to use two or more KSR-1000s feeding off a single antenna to supply different programs to different rooms in the home. I was unable to check this capability for myself because I had only one receiver. There's an auto-clamp circuit designed to make the use of an external descrambler a simple matter. Since my system contains an Oak-Orion descrambler, I hooked it into the system easily and with no apparent loss of signal.

As befits the product of a company with a strong audio background, this receiver's audio section really shines. Not only are the subcarriers the easiest to tune I have ever encountered on a satellite receiver, but their sound quality generally is excellent. Even WFMT (Galaxy 1 Transponder 3), Chicago's Fine Music station, notoriously hard to tune and listen to because of the Wegener companding process applied to its signal, sounded good if not really hi-fi; the 1000's Dolby B circuit helped marginally to improve it. WFMT is by far the toughest audio test a satellite receiver can undergo; Kenwood outshone anything I've heard yet although there still is room for improvement. While on the subject of satellite audio, let me say that the only control you have over sound quality on this receiver is the Dolby noise reduction circuit and a sliding audio output level pot. I'd have liked some switchable filters and perhaps a graphic equalizer, but nobody seems to offer them. Kenwood's controls are fewer than I'd like, but they're more than most other receivers offer.

How good is the video tuning? Well, the preprogramming certainly works to my wife's satisfaction. Perhaps the highest testimonial I can pay to the KSR-1000 is that she isn't afraid to use it, whether I'm away from home or not (I'm beginning to think I preferred things the way they were). Fine tuning isn't instantaneous and it isn't as precise as it was on my own AFC-equipped receiver which features two front-panel buttons for the purpose. If you're not satisfied with the factory's tuning, you can fine-tune each transponder yourself by going inside the case and adjusting a series of tiny tuning knobs. Let it be noted that I'm a *very* fussy veiwer, but not fussy enough to go to the bother of fine-tuning every single channel. In short, most viewers will be delighted with the receiver's performance just as it comes out of the box.

Metering on this receiver is by means of a seven-bar graph which, once one has gotten used to it, seems more accurate than the voltmeter on my own receiver. Its sensitivity can be adjusted if need be, although I found mine just right as it came from the factory.

I'd really like to try the complete system, if Kenwood ever markets a 56-inch stroke positioner. The receiver, despite a couple of very minor quibbles, is the best I've laid hands on by a long shot and the most user-friendly my wife has encountered. If the entire system works as well as the receiver, this would be stiff competition indeed for other manufacturers. •



WHERE TO SHOP

(Continued from page 40)

Steinbergs. All the stores (55 in all) are offering an assortment of Winegard, M/A-Com, Norsat and Panasonic gear. Each outlet is equipped with between two and three different systems ranging in price from a $1,399 patio system to $3,699 for a full-blown, full-featured system (both including installation).

All stores can demonstrate what they sell and when it comes time to assemble the system in you're backyard, they save you the trouble of making a phone call. All 55 stores belong to a new group dubbed the Satellite Service Group. The fledgling organization is a regional service network consisting of established satellite dealers who will come and do the dish dirty work. All equipment and service is guaranteed for 90 days, and one-year service contracts are offered for under $100.

While a formidable list, by no stretch of the imagination should this be looked upon as a complete rundown of major concerns now offering satellite systems. If anything it is just the tip of the iceberg, as new and even more impressive names continue to enter the business and add to those looking to sell you a satellite system. In fact, industry insiders believe it won't be too long until there will be more for your dish life at Sears, and that you'll soon be coming to J.C. Penney for more than a good buy on a pair of overalls.

But, as we have seen, just because a system is offered by a well known name doesn't make it either the first or best choice to fulfill your particular needs. If a high degree of service and soup-to-nuts installation is your idea of a good time, then make sure that retailing establishment—whether you've seen them advertise on TV or not—offers those features. If you just want to make sure that the store will honor defective equipment and be in business to upgrade you when 4-foot dishes are all the rage, there's a whole different group to look at. If you like to shop at home, there's no shortage of highly regarded merchants willing to come to your door and fill your order, but remember their inventory is as limited as their dish's ability to move among the cosmos.

So as enticing as it is to drive down to the local Radio Shack and order one of their satellite systems, go only with the outlet that caters to your needs. And that includes giving Pete's Satellite Store a chance at winning your business, too.

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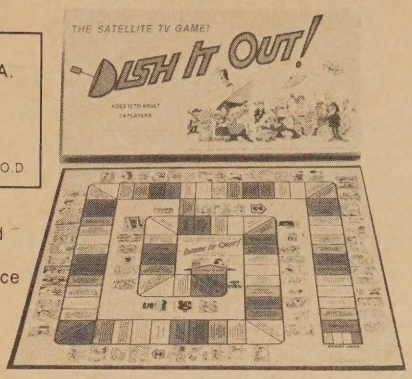

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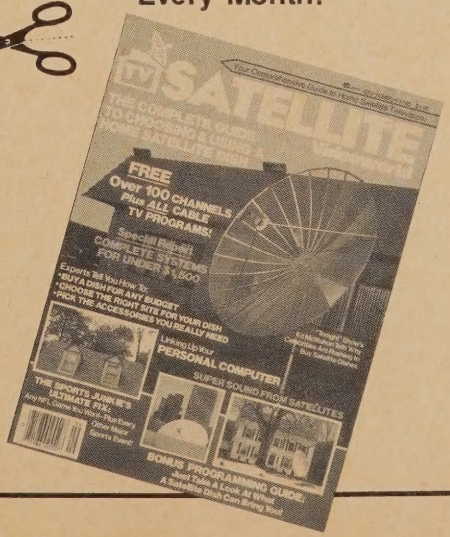

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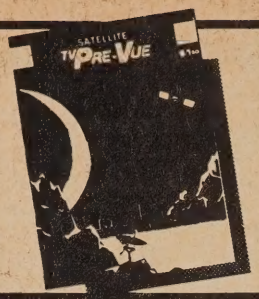

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T.V.

MATRIX SWITCHES

(Continued from page 66)

a matrix switch reduces the risk of incorrectly connecting the various cables and components required in a multiple system. It also reduces the chance of system failure due to poor or improper cable connections.

Beside being faster and simpler to install, the matrix switch is easier to service or replace, and is much neater than a component system. It also "builds in" upgrade opportunities that enable families to purchase additional receivers when the occasion—or pocket book—permits.

There are four established leaders in the production of matrix switches: Pico Products, GenSat, M/A-Com, and Uniden. All matrix switches perform the same function—the connection of up to four receivers in a multiple system to allow independent viewing of all the programs from one satellite. Some matrix switches will work only with that particular manufacturers' receivers. Some require special adapters in order to interface with other brand receivers. For example Pico's MS-4A and MS-4B matrix switches can be used on most name brand satellite receivers without special adapters. The MS-4A was designed for receivers using positive-to-ground switching systems, and the MS-4B was designed for receivers using positive/negative to ground switching. This means the MS-4A requires a reversing switch drive where the V/H switch output on a receiver toggles back and forth from a ground to positive voltage.

"Multiple receiver satellite switches, or matrix switches, allow the hookup of two, three, or four receivers to one dual polarity dish without having to purchase additional equipment."

The MS-4B needs a bipolar switch drive where the V/H switch output on a receiver can switch from a ground to a positive *or* negative voltage.

Pico's MS-4A matrix switch can be used with receiver models such as Amplica, DX, Drake BDC, General Instrument, and Pico's HR-1000 receiver. The MS-4B works with receiver models such as M/A-Com's T-1 and H-1, Panasonic, Kenwood, STS, and Uniden. Besides adaptability with many manufacturers receivers, a multiple receiver satellite switch uses less space than an equivalent hard wired version. Its solid state construction provides years of service.

Problems common to multiple systems include loss of TV pictures, no vertical/horizontal switching, or both. These problems can usually be solved by proper installation and checking cable connections (see installation box below).

A multiple receiver satellite switch does solve some unique satellite television viewing problems—it lets each member of the family watch the program of their choice. So on any given evening when a family views Galaxy 1, Dad can watch college football on WTBS in the den, Mom can watch Robin Williams in "Moscow on the Hudson " on The Movie Channel in the bedroom, the kids can watch "Mousterpiece Theatre" on the Disney Channel in the family room, and Grandma and Grandpa can watch CNN in the living room. The matrix switch solves the problem of who gets to watch what. •

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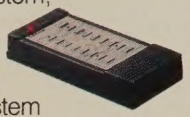

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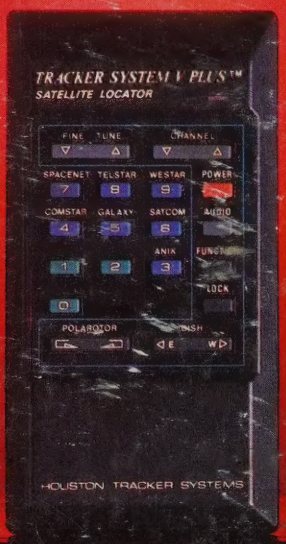

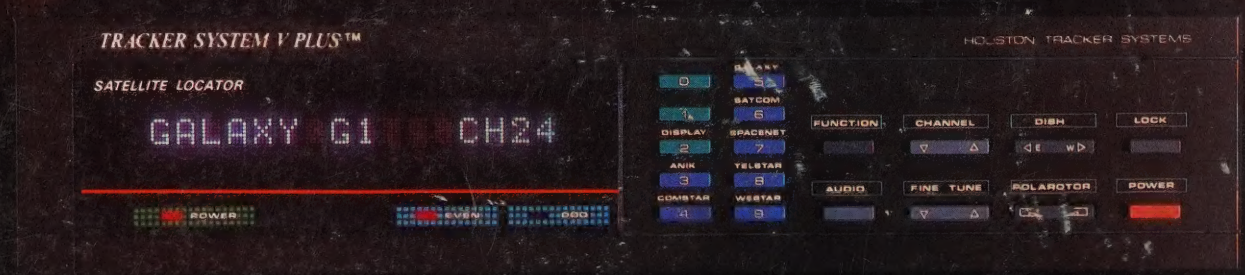

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